ECONSULT SOLUTIONS, INC. FAIR SHARE METHODOLOGY CRITIQUE AND RESPONSE

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REPORT SUBMITTED BY:
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TABLE OF CONTENTS

1.0 INTRODUCTION AND SUMMARY

1.1 BACKGROUND

This submission represents ESI's response to the Ocean County Court's Seventh Case Management order, which provides that "all parties may submit critiques of any expert methodology to the Court" in advance of Regional Master Richard Reading submitting to the court his final methodology report setting for his proposed regional housing need and the allocation of said need to the constituent Ocean County municipalities.

While this submission responds directly to the March 24, 2016 expert submissions by Dr. David Kinsey and Daniel McCue for the Fair Share Housing Center (FSHC) and Art Bernard for the New Jersey Builder's Association (NJBA), it is comprehensive in its discussion of the key methodological issues relevant to the Court and the Special Master's consideration of appropriate fair share methodology. Accordingly, it references, summarizes, and expands on the series of reports and submissions produced by ESI and by FSHC and NJBA and their respective efforts over the past year pursuant to the directives of Mount Laurel IV.[1]

Despite the comprehensive nature of this response, the exclusion of any specific item from this submission does not represent agreement with the methodology or approach to any given calculation. ESI maintains that the methodology and calculations submitted in our March 24, 2016 *New Jersey Affordable Housing Need and Obligations* report are correct and appropriate for calculating Round 3 obligations. We also maintain that the methodology and calculation submitted in our March 24, 2016 *Gap Period Calculation* report, while not appropriately representing an additive element of fair share obligations for the reasons set forth in that report (and detailed in our many submissions on the gap period, including this one), is a sound methodology in response to the Court's February 18, 2016 opinion endorsing the recommendations from the Special Master's February 17, 2016 *Bridging the Gap* report. In the interest of space and clarity, only the most important methodological distinctions and new areas of agreement or disagreement between parties are addressed in detail in this submission.

Our report proceeds as follows:

- Section 1 reviews the revised March 24th FSCH/Kinsey submission, model and calculations
- Section 2 reviews key methodological differences between the ESI and Kinsey/FSHC models, updating previous discussion in light of the March 24th submissions by both parties
- Section 3 reviews ESI's analysis of the appropriateness of assigning obligations from the Gap Period, updating our previous discussion based on the latest submissions
- Section 4 updates ESI's analysis of the realistic potential to implement assigned affordable housing obligations in light of the calculations in the latest submissions by both parties.

[1] Appendix A of this report contains a full list of expert reports and submissions by ESI pursuant to these matters and relevant to the Court and the Special Master's consideration of appropriate fair share methodology.

1.2 OVERVIEW OF REVISED KINSEY/FSHC MODEL

Dr. Kinsey's March 24, 2016 report and accompanying spreadsheet model represents the third set of calculations of affordable housing obligations submitted by Kinsey/FSHC.

- In July 2015, Kinsey/FSHC released an update of their April 2015 report and accompanying spreadsheet model for statewide affordable housing obligations for Round 3 ("July 2015 Kinsey Model"). This model calculated Round 3 obligations using a single Prospective Need period stretching from 1999 – 2025.

- In January 2016, Kinsey/FSHC, in response to the Ocean County Court, Kinsey/FSHC submitted two calculations of affordable housing obligations arising from the "gap period" (1999 – 2015), including an "alternative gap model" calculation that departed from the calculations in the July 2015 Kinsey model. This submission did not include updated calculations of Present Need or Prospective Need obligations, and FSHC's accompanying submission level still maintained the appropriateness of the July 2015 Kinsey model for calculating Round 3 obligations.

- In March 2016, Kinsey/FSHC, in response to the Ocean County Court, Kinsey/FSHC submitted an updated calculation of affordable housing need with a separate and distinct calculation of the gap period, as well as updated calculations of Present Need and Prospective Need ("March 2015 Kinsey Model"). Dr. Kinsey's workbook included final obligations for Ocean County municipalities only, but sets forth a methodology and updated data allowing for the calculation of obligations for all municipalities statewide.

As discussed throughout this report, the March 2016 Kinsey/FSHC model includes significant revisions from Dr. Kinsey's previous methodologies in several areas:

- Present Need: Dr. Kinsey introduces a new methodology for the calculation of Present Need, extrapolating results to 2015 rather than calculating results as of 2010. Further, Dr. Kinsey applies secondary sources of affordable housing to adjust Present Need obligations for the first time.

- Filtering: Dr. Kinsey submits for the first time his own calculation of filtering, rather than relying on an extrapolation of COAH's 2008 calculation as in his previous models

- Allocation Caps: Dr. Kinsey does not apply the 1,000 unit cap in his latest methodology, where previously he had applied it to Prospective Need only. Dr. Kinsey does apply the 20% cap to municipal Prospective Need obligations, though he erroneously applies it separately to Gap Period and Prospective Need obligations, rather than the sum of these new construction obligations.

- Data Updates and Revisions: Dr. Kinsey incorporates numerous data updates, including the latest American Community Survey one-year (2014) and five-year (2010 – 2014) data where appropriate, revised regional income calculations from HUD, updated municipal demolition and building permit data from the New Jersey Department of Community Affairs, and others. In

addition to data updates, minor changes are made to the methodological approach in several instances.

- Gap Period: Dr. Kinsey updates his January 22nd "alternative gap model" calculation with updated data and revisions to the methodology. Notably, Dr. Kinsey asserts that the gap period calculation represents "a form of Prospective Need" contrary to the Regional Special Master's explicit determination based on the clear language from the FHA to the contrary.

Dr. Kinsey continues to contradict his professed strict fidelity to the Prior Round methodology by his actual calculations in his latest submission. Yet, Dr. Kinsey claims that each of his methodologies followed the Round 2 methodology "almost mechanically":

> …in strict compliance with Mount Laurel IV, in the Kinsey-FSHC R3 Model July 2015 we tracked the Prior Round methodology as closely as possible, almost mechanically….
>
> [Jan 29 Kinsey Response, p. 53 (emphasis added)]
>
> …this Prospective Need methodology follows closely and almost mechanically the COAH Second Round methodology in keeping with the Appellate Division's 2010 Order, as affirmed by the Supreme Court in 2013 and 2015.
>
> [Kinsey March 24 Report, p. 25]

The claim of both methods to follow the Prior Round "mechanically" is undermined by the simple fact that the two methodologies are different from each other. As Section 2 of ESI's February 19th *Response to Comments* report discusses at length, Dr. Kinsey's July 2015 model was not in fact a "mechanical" reproduction of the Prior Round method, nor is such a reproduction desirable (to the extent that it perpetuates clear mathematical and conceptual errors) or even possible (due to changes in circumstances, data availability and legal constraints). As detailed in Section 2.6 of that report,

> Dr. Kinsey's model on multiple occasions fails to follow procedures from the Prior Round which were reproducible (as demonstrated by the ESI model), conveniently always in instances where following the Prior Round methodology might result in a lower calculation of affordable housing need than that offered by Dr. Kinsey.
>
> [ESI February 19th *Response to Comments* report, p. 18]

Specific examples (including population projections, headship rates and the allocation of secondary sources) of these decisions are provided within that report.

Now, Dr. Kinsey presents a significantly revised calculation in the areas outlined above. Despite these differences, the calculation is presented as equally "mechanical." Indeed, in the case of the extrapolation of present need to 2015, the same technique that Kinsey describes as "deviating sharply" when undertaken by ESI has been adopted by Dr. Kinsey and is now described as "following faithfully"

the Prior Round method.[2] In truth, as ESI has always maintained, any fair share methodology necessarily contains numerous modeling choices.

> Any calculation of the degree of sophistication required to estimate affordable housing need and allocate that need to produce municipal obligations by necessity includes a number of choices on the part of the analyst which influence the final result.
>
> [Sep 24 ESI *Review and Analysis* Report for the New Jersey State league of Municipalities, p. 2]

Interestingly, in the face of several methodological problems identified by both ESI and the Regional Special Master, Richard Reading, **Dr. Kinsey's revised calculations do not decrease, but rather increase, calculated affordable housing need compared to his previous two submissions**.

Revised Kinsey Model Results

As reviewed above, the July 2015 FSHC/Kinsey model calculates and presents Round 3 affordable housing obligations for all 565 municipalities in New Jersey. This model included a "Prospective Need" period of 26 year (1999 – 2025), and as such produces a single obligation calculation for the gap period (1999 – 2015) and for the upcoming "prospective" period (2015 – 2025).

In January and March 2016, FSHC/Kinsey submitted revised models and calculations to the Ocean County Court in response to Court requests regarding separate calculations of obligations for the Gap period (1999 – 2015) and Prospective Need period (2015 – 2025). These models calculate and present obligations for Ocean County municipalities only. However, all data inputs are updated and presented on a statewide basis, and the methodology utilized for Ocean County municipalities is equally applicable to all 565 municipalities statewide. ESI has applied the methodology and calculations utilized within the Kinsey/FSHC January and March submissions to calculate the implications of the FSHC/Kinsey models on total statewide obligations.[3] The methodology and data inputs in this calculation are all present within the Kinsey models, and are identical to those used by Dr. Kinsey to calculate obligations for Ocean County.

The results of these calculations are presented in the three tables below. Because application of municipal caps varies between Dr. Kinsey's models, an "apples to apples" comparison of pre-capped obligations is presented (nor is any adjustment made for credits). Obligations shown are inclusive of Dr. Kinsey's application of adjustments for secondary sources of affordable housing (filtering, demolitions and conversions).

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[2] See Section 2.1 of this report for a full discussion of this issue

[3] It should be noted that the obligations calculated and shown in the "FSHC R3 Ocean County Model March 2016.xlsx"spreadsheet submitted in support of the March 24th Kinsey report do not match the obligations for Ocean County municipalities shown on page 81 of that report due to apparent errors. In the case of the gap period obligation, the aggregate obligation for Ocean County in the workbook(3,462) is far lower than that shown in the report (12,262) due to a coding error in which Dr. Kinsey's spreadsheet incorrectly reports net filtering of for sale units within the gap period (see column I of Tab 7.Filtering). This error is corrected in ESI's application of the Kinsey methodology to all municipalities. For Prospective Need, Dr. Kinsey's workbook shows an aggregate obligation of 11,152, rather than the 11,008 shown in his report, and the source of this discrepancy is not apparent. ESI has applied the Prospective Need calculation as set forth in the workbook to all municipalities statewide.

- Dr. Kinsey's July 2015 model includes a single "Prospective Need" period from 1999 – 2025.
    - LMI households are projected within this model to increase by 285,000 over the full period (1999 – 2025). Prospective Need obligation is increased to 292,000 with the application of secondary sources.
    - Total obligations prior to allocation caps or credits, including Prior Round (1987-1999, as calculated by COAH in 1994) and Present Need (calculated by Dr. Kinsey as of 2010) total 440,000 (see Table 1.1)
- In January 2016, Dr. Kinsey submitted two "gap period" calculations. The first was a "truncated" Kinsey model, which utilized the same structure and approach as the full 1999 – 2025 model but truncated the calculation to cover the years 1999 – 2015. The second was an "alternative" model which estimated the 1999 – 2015 period based on observed data. Gap obligations shown below are drawn from this alternative gap model, while the corresponding obligation for 2015-2025 (which is not presented in the Kinsey submission) is calculated by deducting the results of the truncated 1999 – 2015 model from the results of the full 1999 – 2025 calculation (which Dr. Kinsey/FSHC continued to stipulate in that submission appropriately calculated Round 3 obligations) to reflect obligations from the 2015 – 2025 period under Dr. Kinsey's methodology.
    - LMI households are estimated within this model to have increased by 109,000 over the gap period (1999 – 2015). Gap obligation is increased to 115,000 with the application of secondary sources.
    - LMI households are projected within this model to increase by 139,000 over the Prospective Need period (2015 – 2025). Prospective Need obligation is increased to 143,000 with the application of secondary sources.
    - Total obligations prior to allocation caps or credits, including Prior Round (1987-1999, as calculated by COAH in 1994) and Present Need (calculated by Dr. Kinsey as of 2010) total 407,000 (see Table 1.2)
- In March 2016, Dr. Kinsey submitted a new model and report inclusive of both the Gap Period and the Prospective Need period, as well as a recalculation of Present Need (which now corresponds with the start of the Prospective Need period in 2015).
    - LMI households are estimated within this model to have increased by 96,000 over the gap period (1999 – 2015). Gap obligation is increased to 146,000 with the application of secondary sources.
    - LMI households are projected within this model to increase by 138,000 over the Prospective Need period (2015 – 2025). Prospective Need obligation is increased to 175,000 with the application of secondary sources.
    - Total obligations prior to allocation caps or credits, including Prior Round (1987-1999, as calculated by COAH in 1994) and Present Need (calculated by Dr. Kinsey as of 2015) total 489,000 (see Table 1.3)

TABLE 1.1 - JULY 2015 FSHC/KINSEY MODEL
CALCULATED AFFORDABLE HOUSING OBLIGATIONS (PRIOR TO CAPS OR CREDITS)

Region	Prior Round Obligation (1987 – 1999)	Present Need (2010)	Prospective Need (1999 – 2025)	Total
1	12,471	24,055	58,208	94,734
2	9,294	16,839	58,310	84,443
3	13,323	6,535	52,215	72,073
4	27,359	7,155	59,035	93,549
5	14,056	4,217	38,628	56,901
6	9,372	3,256	25,723	38,351
TOTAL	**85,875**	**62,057**	**292,119**	**440,051**

TABLE 1.2 - JANUARY 2016 FSHC/KINSEY ALTERNATIVE GAP MODEL
CALCULATED AFFORDABLE HOUSING OBLIGATIONS (PRIOR TO CAPS OR CREDITS)

Region	Prior Round Obligation (1987 – 1999)	Present Need (2010)	Prospective Need (2015-2025)	Gap Period Allocation (1999 – 2015)	Total
1	12,471	24,055	35,262	13,321	85,109
2	9,294	16,839	32,294	21,376	79,803
3	13,323	6,535	23,184	18,353	61,395
4	27,359	7,155	23,869	25,981	84,364
5	14,056	4,217	18,634	23,404	60,311
6	9,372	3,256	9,930	13,299	35,857
TOTAL	**85,875**	**62,057**	**143,174**	**115,734**	**406,840**

TABLE 1.3 - MARCH 2016 FSHC/KINSEY MODEL
CALCULATED AFFORDABLE HOUSING OBLIGATIONS (PRIOR TO CAPS OR CREDITS)

Region	Prior Round Obligation (1987 – 1999)	Present Need (2015)	Prospective Need (2015-2025)	Gap Period Allocation (1999 – 2015)	Total
1	12,471	30,705	45,300	19,286	107,762
2	9,294	22,336	31,126	23,662	86,418
3	13,323	8,660	26,348	25,241	73,572
4	27,359	8,153	30,234	33,035	98,781
5	14,056	6,704	28,226	29,487	78,473
6	9,372	6,253	13,428	15,150	44,203
TOTAL	**85,875**	**82,811**	**174,662**	**145,861**	**489,209**

In spite of considerable revision, the Kinsey model continues to be plagued by the same errors that ESI identified in ESI's many submissions. Further, it continues to produce nonsensical results:

- **68% of incremental households** over the Prospective Need period (2015 – 2025) **are estimated to be** LMI within the Kinsey model;

- **Elderly (65+) households are projected to represent 117% of LMI household growth** over the Prospective Need period within the Kinsey model, with negative growth projected among under 65 LMI households;

- **Annualized LMI household growth over the Prospective Need period** (2015 – 2025) is estimated within the Kinsey model to be **larger than annualized *total* household growth** (as calculated by Dr. Kinsey himself) **over the gap period** (1999 – 2015)

Indeed, a simple comparison of the LMI HH growth identified by Dr. Kinsey himself during the gap period (1999 – 2015) and projected by Dr. Kinsey over the Prospective Need period (2015 – 2025) shows that the projections fail the test of internal consistency and defy reason. During the gap period, where Dr. Kinsey's calculations are constrained by observed data, the Kinsey model estimates an increase of fewer than 6,000 LMI households per year. During the Prospective Need period, based entirely on projections, Dr. Kinsey's assumptions and methodology yield an estimate of an increase of more than 13,800 LMI households per year – more than 2.3 times the increase calculated by Dr. Kinsey himself for gap period. **Dr. Kinsey offers no plausible rationale for this radical increase in LMI household growth over the next decade relative to the observed trends in his own analysis**.

1.3 SUMMARY

As described above, Dr. Kinsey's March 2016 model has significant revisions and new approaches from his previous submissions, despite the fact that each methodology is claimed equally to follow the Prior Round method "mechanically." The new methodology produces still higher calculations of affordable housing obligation from those submitted in the July 2015 Kinsey model.

Dr. Kinsey's new submission continues to be plagued by many of the same methodological issues as his previous methodologies, which have been identified and discussed at length by ESI and the Special Master. It also continues to produce nonsensical results, as illustrated by simple comparisons of Dr. Kinsey's calculations of LMI household growth over the gap period (1999 – 2015), in which his calculation is constrained by observed data, and the Prospective Need period (2015 – 2025), in which his calculation is based entirely in projections. Dr. Kinsey offers no plausible rationale to explain his projection that annualized household growth over the Prospective Need period will be more than 2.3 times as high as observed during the gap period (according to his own calculations), or his projections that:

- 68% of incremental households over the Prospective Need period (2015 – 2025) will be LMI

- Elderly (65+) households will represent 117% of LMI household growth over the Prospective Need period within the Kinsey model, with negative growth among under 65 LMI households.

- Annualized LMI household growth over the Prospective Need period (2015 – 2025) will be larger than annualized *total* household growth over the gap period (1999 – 2015).

Further, as reviewed in Section 3 of this report, Dr. Kinsey's March 2016 report asserts that the gap period represents "a form of Prospective Need" in direct contradiction to the findings of the Special Master and the definition of Prospective Need within the Fair Housing Act. Since Dr. Kinsey stipulates (correctly) that the fair share methodology calculates only Prospective Need and Present Need, his inclusion of these households in the fair share obligations is based entirely on his redefining the Legislature's definition of prospective need to include a purported need that is anything but prospective – the purported need from the prior 16 years.

Finally, as reviewed in Section 4 of this report, Dr. Kinsey's updated obligations are further disconnected than ever from the level of housing obligations that are realistically possible to implement given a consideration of private market and the historic production of housing through the COAH process. As detailed within that section, it is the clear intent of the Fair Housing Act to generate realistic fair share obligations that offer municipalities the opportunity for voluntary compliance with the fair share process and lead to the generation of affordable housing through a comprehensive planning and implementation process, rather than through a builder's remedy method. Further, under the suggested cumulative methodology, the assignment of such excessive Round 3 obligations is not a one-time occurrence but will instead remain with municipalities indefinitely in the form of unsatisfied obligations rolling over into each new cycle. Such growth in obligations is neither sustainable nor realistic relative to market capabilities, and therefore inconsistent with the language of the FHA, and does not provide municipalities with a realistic path to voluntary compliance as envisioned by the Fair Housing Act.

2.0 KEY METHODOLOGICAL DISPUTES

Section 2 reviews key areas in which the March 24th methodologies submitted by ESI and Kinsey/FSHC differ materially, impacting the magnitude of calculated obligations. Discussion is comprehensive in five broad areas, which are discussed in turn below:

1) Present Need, which discusses key elements of the calculation of LMI households currently living in deficient housing units;

2) Population and Households, which discusses population projections and headship rates used to project incremental household growth over the Prospective Need period;

3) Eligible LMI Households, which discusses the definition and calculation of LMI households, the significant housing asset test, and the re-allocation of regional need used to define the incremental growth in eligible LMI households over the Prospective Need period;

4) Municipal Allocation of Regional Need, which discusses the employment, household income and developable land calculations used to allocate regional Prospective Need to municipalities;

5) Secondary Sources of Affordable Housing Supply, which discusses the projections of demolitions, residential conversions and filtering, and the allocation of those sources to adjust affordable housing need.

This submission does not repeat in full all aspects of ESI's methodology, which are set forth in detail in ESI's March 24th *Need and Obligations* report and accompanying workbook, the principles underlying that methodology, which are set forth in detail in Section 2 of ESI's February 19th *Response to Comments* report, or ESI's gap period calculation, which is set forth in detail in ESI's March 24th *Gap Period Calculation* report and accompanying workbook.

2.1 PRESENT NEED

The March 24, 2016 Kinsey submission includes an approach to calculating Present Need that is significantly revised from his July 2015 model (the January 22, 2016 Kinsey gap submission did not offer a Present Need calculation). Two major changes are implemented in the revised model.

- First, Present Need is extrapolated to the start of the Prospective Need period in 2015, mirroring the ESI approach that Dr. Kinsey had previously criticized, though the execution of the calculation differs in an important respect reviewed below.
    - To estimate the overlap between Present Need and the gap period calculation, Dr. Kinsey, like ESI, considers the incremental change in the Present Need over the gap period (1999 – 2015). However, due to the problems in the execution of the calculation, he incorrectly concludes that Present Need has declined over the period, implying no overlap between the gap allocation and Present Need.

- Second, the revised Kinsey model now applies secondary sources of housing supply to the Present Need in cases where there is excess after an adjustment to Prospective Need. This also largely mirrors the ESI approach, though again the execution of the calculation varies in important ways.

These issues are discussed in turn below, with the latter issue receiving further coverage in the discussion of the allocation of Secondary Sources in Section 2.5.4.

Extrapolation of Present Need to 2015

Dr. Kinsey's March 24th calculation revises one of the basic components of the Present Need calculation – the date as of which Present Need is estimated. In his July 2015 model, Dr. Kinsey explains that his Present Need calculation was executed as of 2010 (using decennial Census data) "without extrapolation":

> This methodology remains faithful to the Prior Round methodology, which used the most recent decennial census year as the point in time to calculate Present Need, and uses COAH's calculated Rehabilitation Share data for each municipality as of 2010, without extrapolation beyond 2010, as "the most up-to-date available data."
>
> [Kinsey July 2015 Report, p. 7]

As discussed in ESI'S September 24, 2015 *Review and Analysis* of the Kinsey methodology for the New Jersey State League of Municipalities (NJLM), as well as subsequent work, using a Present Need date out of alignment with the start date for the Prospective Need period creates problems with double counting of separate components of need that are intended to be additive. This is the case because the clear delineation intended by the FHA between Present Need (which exists as of today) and Prospective Need (which is tied to household growth in the future, i.e. it does not yet exist) is lost when the dates do not align.[4]

Dr. Kinsey has now revised his method to estimate Present Need as of 2015, aligning with the start of the Prospective Need period:

[4] As explained in ESI's September 24th *Review and Analysis* report (p. 15)

> The mechanics of the two calculations suggest that given overlapping time periods, many of the same LMI households may be captured in both categories, and therefore "double counted" when the categories are added together…Growth in LMI households from 1999 to present will be captured in the prospective need calculation. However, some of these households will have occupied deficient housing between 1999 and 2010, and will therefore also be captured in the present need calculation as of 2010. The categories therefore cannot be summed to produce current obligations, though that addition is what the Kinsey Report does.

> Consistent with COAH's approach in the Second Round, Present Need is estimated as of July 1, 2015, the same date as the start of the ten-year Prospective Need 2015-2025 projection period in accordance with the February 2016 decision of Judge Troncone.
>
> [Kinsey March 24 Report, p. 16]

His execution of this calculation mirrors the basic steps undertaken in the ESI *Need and Obligations* report:

- Utilizing the most up to date American Community Survey (ACS) 5-year sample (in this case, 2010-2014)[5] to estimate Present Need by municipality with the most recent available data; then
- Utilizing Census 2000 data to estimate the Present Need as of 2000 by municipality.

Dr. Kinsey describes this calculation as follows:

> Fifth, once unique deficient housing units are identified by municipality as of 2012 (mid point of 2010-2014 ACS PUMS data), then unique deficient housing units by municipality as of 2015 are calculated by calculating and applying the 2000-2012 trend in deficient housing units in the municipality and extending that trend through 2015
>
> This methodology follows faithfully the COAH Second Round methodology and estimates that the statewide Present Need under Mount Laurel IV as of July 1, 2015 is 60,264 housing units
>
> [Kinsey March 24 Report, p. 17,18]

In his response report to ESI's December *Need and Obligations* report, Dr. Kinsey characterized this same basic technique as follows:

> …where the Prior Round methodology relied upon the previous decennial Census as its principal data source and point in time for determining Present Need, Econsult took another step, deviating sharply from the Prior Round methodology by creating a trend line from the 2000 Census to 2009-2013 ACS, extrapolating to 2015, using different data sources.
>
> [Kinsey Jan 29 Response Report, p. 51, emphasis added]

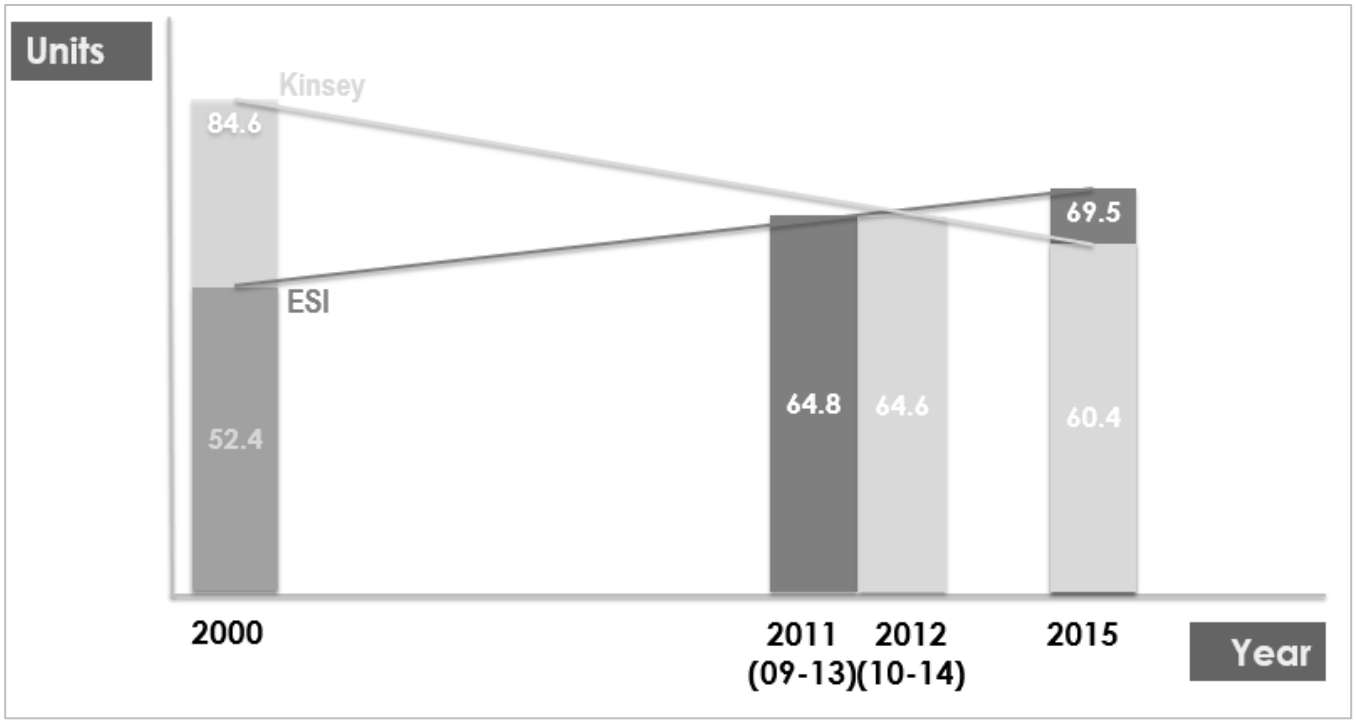
We note that Dr. Kinsey has in his two reports described two opposite approaches (estimating Present Need as of 2010 "without extrapolation" and estimating Present Need as of 2015 with extrapolation) as "faithful to the Prior Round methodology" in the first instance and "consistent with COAH's approach in the Second Round" in the second instance. Further, the same extrapolation methodology that Dr. Kinsey characterized as "deviating sharply from the Prior Round methodology" when executed by ESI he now claims "follows faithfully the COAH Second Round methodology" when executed in his model.

[5] As noted in footnote 10 of ESI's *Need and Obligations* report (p. 19), ESI's methodology utilizes 2009-2013 ACS five-year data, rather than 2010-2014 five year data, which released too late for inclusion in the reort. Since five-year samples are updated on a rolling basis with each new year, there is functionally an 80% overlap in data between the 2009-2013 and 2010-2014 samples.

These passages further illustrate that Dr. Kinsey's repeated claims that the series of modeling choices embedded in his methodology are simply a "mechanical" execution of the Prior Round method are without merit, and that his earlier view of ESI's approach as a substantial deviation from an acceptable methodology has now changed.

Further, while we support Dr. Kinsey's adoption of the extrapolation approach to estimating Present Need as of 2015, his execution of that calculation contains a major conceptual flaw. While ESI and Dr. Kinsey identify a very similar magnitude of Prospective Need using the most up to date ACS (approximately 65,000 statewide)[6] the calculations differ significantly as to the need identified in 2000, with Dr. Kinsey estimating 84,600 and ESI estimating 52,400. As a result of this difference, the extrapolation methodology from the latest ACS data to 2015 increases the estimated need in the ESI model (since the trend during the gap period is upwards) but decreases estimated need in the Kinsey model (since the trend during the gap period is downwards). This results in a difference of approximately 9,000 in the estimated Present Need as of 2015 (see Figure 2.1).

FIGURE 2.1 - COMPARISON OF KINSEY AND ESI PRESENT NEED TREND LINES



This difference in estimated need as of 2000 arises from a definitional difference in the calculation. One of the indicators of deficient housing used in the Present Need calculation is housing that is both old and overcrowded, and, in keeping with the Prior Round method, the Kinsey and ESI estimates of the

[6] Dr. Kinsey's analysis of 2010 – 2014 ACS five-year data identifies a statewide Present Need of 64,605, while ESI's analysis of ACS 2009-2013 five-year data identifies a statewide Present Need of 64,798

current Present Need each utilize a definition of housing units that are built more than 50 years ago as the threshold for housing defined as "old."[7] However, while the ESI standard maintains this definition for the 2000 Present Need calculation by setting the threshold for "old" housing in that analysis at 1950, Dr. Kinsey maintains the 1965 cut-off used for the current calculation for the year 2000 calculation as well. In other words, by his definition, housing that was 36-50 years old in 2000 is considered "old" for the purposes of that calculation, and thus can be identified as a deficient unit and included as part of the Present Need.

Dr. Kinsey justifies this approach as follows:

> The same calculation described in steps 1-4 above is made for 2000 using the 2000 Decennial Census PUMS data, including cutting off overcrowding as of 1965 to show what Present Need would have been in 2000 if using the most current definition, rather than using the 1950 cut off that hypothetically would have used if this calculation were made in 2000 rather than today. This allows for a true trend that compares the same units over time and whether those units in each municipality are becoming more or less deteriorated, rather than a "trend" that is based mainly on whether a municipality had a lot of housing built in the 1950s. This approach shows the actual progress towards rehabilitating more housing units over time, or conversely having more deterioration of additional stock.
>
> [Kinsey March 24 Report, p. 17-18]

Dr. Kinsey advanced a similar line of argument in his January 29th comments on ESI's *Need and Obligation* report, which stated that:

> Econsult has derived the trend line by changing the cutoff date for counting overcrowded units, which means this is not really an increase in Present Need.
>
> [Jan 29 Kinsey Response, p. 52]

This argument has thus been raised before, and is addressed in Section 3.6 of ESI's February 19th *Response to Comments* report. It warrants re-statement in light of Dr. Kinsey's incorporation of a shifting age standard into his model.

ESI's approach does indeed change the cut-off *date* for old units, but does so precisely to maintain a consistent *age standard* for the definition of old units.[8] Dr. Kinsey suggests that this approach mischaracterizes the trend in Present Need for a given municipality, because it measures the aging of a municipality's housing stock, rather than the deterioration or rehabilitation of substandard units. We wholly disagree, and wonder how Dr. Kinsey can purport to extrapolate the Present Need without accounting for the aging of the housing stock, given that old and crowded houses represented the largest category of housing deficiency.

[7] It is worth noting that ESI utilizes a threshold of 1960 for the definition of "old" in 2009-2013 ACS data, while Dr. Kinsey uses a threshold 1965 in 2010-2014 ACS data. In all instances, housing that is defined as "old" is not automatically considered "deficient" – only those units that are identified as BOTH old and "overcrowded" (defined as more than 1 person per room) are identified as deficient.

[8] As explained in ESI's Feb. 19 *Response to Comments* report, "old housing is that which is more than 50 years old at the time of measurement, not that which is built before some arbitrary fixed date.

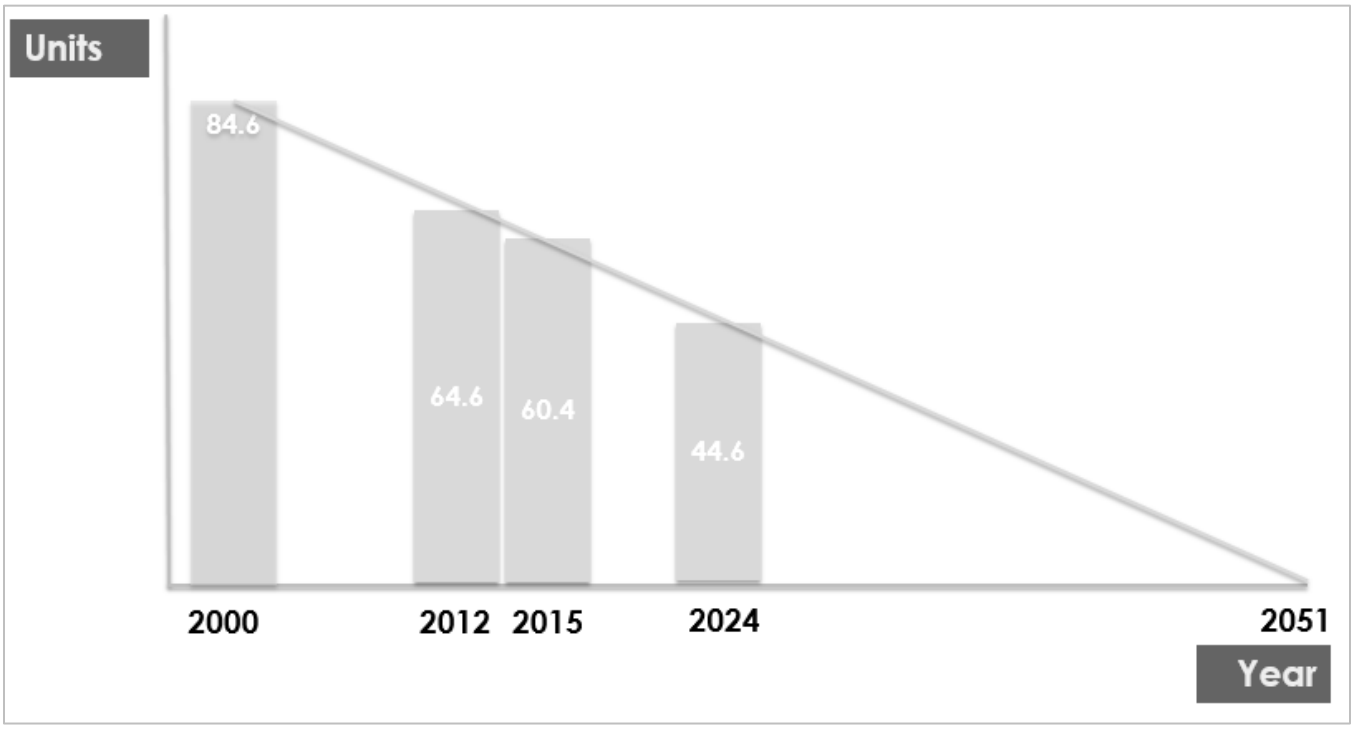
The conceptual basis for the ESI approach is explained as follows in the February 19th ESI *Response to Comments* report:

> This definition is entirely consistent with the core principle of the extrapolation approach. Unlike the Kinsey approach, the ESI model recognizes that the housing stock is not static. Each year, units may fall into deficiency, may be repaired, or may be demolished. The largest indicator of deficiency in the Present Need calculation are those units that are old and crowded. Given an appropriate "50 year" definition of "old" housing, each year more units will cross this threshold and enter into the Present Need (if they are also crowded). A trend line based on a shifting age span of housing would fail to accurately proxy the volume of housing units that cross this threshold on an annual basis in each municipality.
>
> [February 19th ESI *Response to Comments* report, p. 75]

Dr. Kinsey claims his approach represents a "true trend that compares the same units over time" and captures "progress towards rehabilitating more housing units over time, or conversely having more deterioration of existing stock." In truth, both approach capture units that are rehabilitated or fall into deterioration, since they adopt the same basic approach to identifying housing with inadequate kitchen or plumbing facilities, indicators which are not related to age. In addition, both approaches capture the effects of deficient units rotating out of the stock (through demolitions). The Kinsey approach, however, captures only the deterioration of kitchen and plumbing conditions, and not deterioration due to age and crowding conditions, as set forth in the Present Need standards. **It is wholly unsurprising that by fully capturing the rehabilitation of housing and demolition of inadequate stock, but only partially capturing the deteriorating of existing stock, Dr. Kinsey would (incorrectly) identify a downward trend in the Present Need.**

A simple thought exercise can also illustrate why this approach is wrong. Dr. Kinsey utilizes the trend from a 12 year period (2000 – 2012), which in his model shows a drop of approximately 20,000 units, to project changes in the Present Need over the 3 year period that follows (2012 – 2015). Conceptually, his approach could just as easily be applied to a longer period in the future. For example, a drop of 20,000 in the 12 year period from 2012 – 2024 would imply a reduction in the Present Need to 45,000. Indeed, at that rate, only another 27 years would be required to eliminate the Present Need entirely (see Figure 2.2).

FIGURE 2.2 – EXTRAPOLATED KINSEY PRESENT NEED TREND



This projection for the elimination of Present Need by around 2050 is of course inconsistent with common sense, since even if all units with inadequate kitchen and plumbing were addressed, crowded units would continue to become "old" with the passage of time. This aberrant projection, however, arises from the same approach as Dr. Kinsey's equally aberrant projection of the Present Need trend from 2012 – 2015, which arises from a fatally flawed definitional standard.

The answer in Dr. Kinsey's approach varies based on the number of years looking back. Another helpful though exercise is to imagine that this calculation is being conducted in 2050, but keeping the base year as 2000. The definition of old for the 2050 present need would be houses built in 2000 or earlier, and the definition of old for the 2000 calculation would also be houses built in 2000 or earlier, meaning that all houses would be old houses for the 2000 calculation.

Gap Calculation

This flawed trendline is problematic not only for the current calculation of Present Need, but for Dr. Kinsey's calculation of the gap period. One of the steps set forth in the gap period methodology recommended in the Special Master's February 17th *Bridging the Gap* report was to "adjust the Gap Period LMI households for the 2015 LMI Present Need households." This adjustment is necessary to avoid the double counting of households which are a part of the LMI household growth increment

during the gap period, but live in deficient housing in as of 2015, and therefore absent an adjustment would be captured in both calculations.[9]

The Special Master's *Bridging the Gap* report does not specify an appropriate methodology for arriving at this adjustment. One logical approach to estimating the magnitude of the overlap, which was arrived at by both ESI and Dr. Kinsey separately in respective March 24th submissions, is to observe the incremental change in Present Need over the gap period, and to use this increase as a proxy for the overlap between gap period LMI household growth and the current Present Need. ESI undertakes this calculation within our gap period methodology and estimates an overlap of approximately 19,000 units, based on incremental growth from Present Need as estimated in Census 2000 to Present Need estimated as of 2015, extrapolated to the full gap period.[10]

Dr. Kinsey's gap period calculation, by contrast, appears to adopt the same basic approach, but arrives at an entirely different result:

> The decline in Present Need over time using a consistent set of Census criteria show that there is no overlap between this calculation and Gap Period Prospective Need.
>
> [Kinsey March 24 Report, p. 19-20]

Therefore, **Dr. Kinsey's flawed calculation of the Present Need as of 2000 not only impacts his estimate of Present Need as of 2015, but also impacts his gap calculation, by leading him to (falsely) conclude that Present Need decreased over the gap period.** As reviewed at length above, this decrease is a product of a shifting definitional standard and not of improving characteristics of the overall housing stock.

The logic set forth in this passage by Dr. Kinsey, in which a decline in Present Need over the gap period is dispositive as to the lack of an overlap between the Present Need and gap period LMI household growth calculations, suggests that conversely, an increase in Present Need over the gap period would be an indicator of such an overlap. This describes exactly the ESI approach to this overlap calculation, which defines the overlap as the incremental growth in the Present Need (calculated using a consistent age standard for old housing) as the overlap between the two calculations, and accordingly deducts that increment by region from the gap allocation.

Application of Secondary Sources

Dr. Kinsey also applies secondary sources of affordable housing supply, to the extent that they are not exhausted by their application to the Prospective Need, to the Present Need allocation. The application of secondary sources to Present Need is in keeping with the Round 2 methodology, and is also

[9] See the "Overlap with Present Need" section (p. 13-14) of ESI February 8th *Analysis of the Gap Period* report for an in depth discussion of this issue.

[10] See pages 12-13 and Table 2.5 of ESI's *Gap Period Calculation* for more detail

undertaken by ESI. However, as pointed out in ESI's February 19th *Response to* Comments report, it was not undertaken in the July 2015 Kinsey methodology

> The Kinsey model applies secondary source adjustments to Prospective Need only, while the ESI model applies them to both Present Need and Prospective Need. In this, ESI has indisputably followed the Second Round methodology (which holds that "reductions apply to housing need no matter how the need was generated" (26 N.J.R. 2348)) and the Kinsey model has deviated from it. Perhaps in tacit recognition of this fact, the Kinsey response report makes no mention of this step.
>
> [ESI Feb. 19 *Response to Comments,* p. 69]

Dr. Kinsey's March 24th methodology now undertakes this step, citing as justification in footnote 39 on page 18 the same passage referenced above by ESI. Within Dr. Kinsey's methodology, this step applies primarily to urban aid municipalities, which are excluded from the allocation of Prospective Need.[11] Dr. Kinsey's allocation methodology for Secondary Sources (discussed in more detail in Section 2.5.4) does not adjust the Prospective Need for these municipalities, but rather adjusts the Present Need, as described in his March 24th report:

> The Present Need calculated for these…is reduced by any so-called "secondary sources" of affordable housing supply and demand, i.e., filtering, conversions, and demolitions, for the 2015- 2025 period — or in some cases increased if the secondary sources are positive, thus creating a greater need for affordable housing rather than contributing to the supply of affordable housing.
>
> [Kinsey March 24th Report, p. 18]

While Dr. Kinsey portrays this step as reducing "and in some cases increasing" the present need obligation for municipalities, based on his calculations of secondary sources, which in contrast to all prior iterations of the methodology show decreases rather than increases in affordable housing supply due to secondary sources the overall increase in magnitude of the need is significant.[12] Table 2.1 below shows that secondary source adjustments increase the Present Need in the March 2016 Kinsey model by more than 22,000 bringing statewide need to nearly 83,000.

[11] This step also applies in some cases to non-urban aid municipalities which have excess secondary sources after their application to Prospective Need. Section 2.5.4 of this report describes a coding error in Dr. Kinsey's workbook which causes this "excess" need to be added to municipal obligations in instances when secondary sources increase affordable housing supply, which should result in a reduction rather than an increase to municipal need.

[12] Section 2.5 of this report reviews in detail Dr. Kinsey's calculations of secondary sources and how they differ from those in ESI's *Need and Obligations* report

TABLE 2.1 - FSHC/KINSEY MODEL COMPARISON OF PRESENT NEED OBLIGATIONS

Region	July 2015 Model Present Need	March 2016 Model Present Need (original)	March 2016 Secondary Source Adjustment to Present Need	March 2016 Present Need Obligation
1	24,055	22,249	8,456	30,705
2	16,839	17,506	4,831	22,336
3	6,535	6,836	1,824	8,660
4	7,155	6,797	1,356	8,153
5	4,217	3,750	2,954	6,704
6	3,256	3,298	2,954	6,253
TOTAL	**62,057**	**60,436**	**22,375**	**82,811**

2.2 POPULATION AND HOUSEHOLDS

This section reviews population projections and headship rates used to project incremental household growth over the Prospective Need period.

2.2.1 POPULATION PROJECTIONS

The Prospective Need calculation begins with the determination of an appropriate population projection over the 10 year Prospective Need period (2015 – 2025). As explored at length in Section 2.5 and Section 3.1.1 of ESI's February 19th *Response to Comments* report, the population projection methodology employed in Round 2 utilized two different sets of projections from the New Jersey Department of Labor and Workforce Development (NJDOLWD) as well as a proprietary projection model from the Center for Urban Policy Research (CUPR) at Rutgers. It is not possible to re-create this methodology exactly, as estimates for one of the two population models (the Historic Migration model) are now available at the statewide level only, and information from the CUPR model is not available. Therefore, any analyst must make a choice as to the most appropriate method to use.

Dr. Kinsey's model uses only the results of the NJDOLWD's Economic-Demographic model, which is available by age cohort and county. In their March 24th submissions, both Dr. Kinsey and Art Bernard correctly note that this model is classified as "preferred" by the NJDOLWD. They do not demonstrate, however, that this designation means it is the only appropriate population projection for the determination of Prospective Need.

First, there is considerable precedent within the fair share methodology for the averaging of population projections in the interest of producing a reasonable estimate. Not only was this undertaken by COAH in Round 2, but Judge Serpentelli in *AMG Realty vs Warren Twp* specifically cites, in his discussion of the use of checks and balances within the fair share methodology, the appropriateness of a population

projection which "averages two population models, one of which is considered to be conservative and one of which is considered to be liberal" (453-454). Using more than one model is therefore squarely in line with the "checks and balances" standard embraced by the Courts (and indeed rhetorically by Dr. Kinsey and FSHC).

Second, in the same methodology document in which it designates the Economic Demographic model as "preferred," the NJDOWLD advises as follows with regard to the use of multiple models:

> The only difference between the Historical Migration Model and the Economic-Demographic Model is the migration assumptions. The projected population from these two models may be used as a range for possible population change in the future**.**
>
> [NJDOLWD, "Methodology – The Projection Models" (emphasis added)]

If indeed the two projections represent a range of possible outcomes, averaging their outputs, rather than utilizing one extreme or the other, is appropriately in keeping with a "checks and balances" approach.

Third, there is precedent in the Round 2 methodology for estimating the *level* of population growth through the averaging of two models, then determining the *distribution* of that population growth though another process.

> The procedure employed in this analysis uses the output of both models and averages their results…The CUPR Econometric Model is used to control the averaged population projections at the Labor Area level….If one entity increases, another entity must decrease to meet the sum of the projection.
>
> [COAH Round 2 Methodology, 26 N.J.R. 2347]

Said another way, the Round 2 methodology determined the overall population based on the output of the two models. Then, another process, utilizing a proprietary model, was used to adjust the distribution of population growth by county and age cohort. Within this process, the overall population level was fixed by the original output from the two models.

Fourth, ESI's approach similarly adopts the average of the Economic Demographic and Historic Migration models as the overall population projection, and then distributes that population growth by county and age cohort without adjustment to overall population level. It does so through a very straightforward procedure that involves one simple assumption – adopting the population distribution provided by the Economic Demographic model and applying it in ratio to the population level set by the average of the two models.

While this approach has been criticized by Dr. Kinsey and Art Bernard, and mischaracterized as involving "excessive mathematical extrapolation"[13] it is conceptually and mathematically straightforward

[13] As reviewed in Section 3.1.1 of ESI February 19th *Response to Comments* report, Art Bernard's January 29th response report accuses ESI of "excessive mathematical extrapolation" that "probably involved 672 separate assumptions" (14).

and produces the same distribution of population as utilizing the Economic Demographic model only, as suggested by Dr. Kinsey and Mr. Bernard. Further, as explained in ESI *Response to Comments* report, it mirrors the procedure and core assumption employed by Dr. Kinsey to distribute population by county and age cohort from 2014 to the overall Census population estimate for 2015 within his model.[14]

Fifth, the expert reports of Dr. Kinsey and Art Bernard have yet to address ESI's finding that NJDOLWD's models have consistently overstated realized population growth. Section 4.2 of ESI's *Need and Obligations* report reviews in detail the historic performance of these models, based on a comparison of a time series of the past seven twenty-year population projections provided by NJDOLWD with observed Census population estimates. That analysis finds as follows:

> Bi-annual projections from both the Economic Demographic and Historic Migration models have consistently overstated future population growth over the time period analyzed. On average, projections from the Economic Demographic model have overstated population growth observed in the Census by 52%, projections from the Historic Migration model by 62%, and the average of the two models by 57%.
>
> [ESI *Need and Obligations* report, p. 31]

While neither projection model is found to be more accurate, the Historic Migration model provides a more conservative projection over the current twenty year time horizon (2012-2032). Given the historic over-estimation of population growth by the projection models, it is appropriate in keeping with a "checks and balances" methodology to incorporate the full "range of population projections," rather than simply applying the more aggressive projection. Indeed, it echoes exactly Judge Serpentelli's ""averages two population models, one of which is considered to be conservative and one of which is considered to be liberal."

Sixth, the inappropriateness of using the Economic Demographic model alone is borne out by the observed data from the current period. While issued in 2014, the NJDOWL projections are based in population estimates as of 2012. Observed Census population estimates are now available for three of the five years (2012 - 2015) of the initial 2012 – 2017 projection period. **The cumulative annual growth rate yielded by *both* models is well above the observed population growth for the 2012 – 2015 period, in keeping with the history of systematic over-projection of population growth** (see Table 2.2)

[14] As explained in ESI February 19th *Response to Comments* report (page 25-26):

> Dr. Kinsey applied population change for each age cohort and county from 2013 to 2014 to the population base to construct an estimated population distribution for 2015. However, the statewide population yielded by this process differed from the statewide population estimated by the Census for 2015, which Dr. Kinsey (rightly) considered the most reliable estimate of total population. Faced with the need to match a statewide population estimate with a non-matching distribution of population by age cohort and county, Dr. Kinsey held the share of population constant for each age, county and cohort, adjusting each to achieve the targeted statewide population.

TABLE 2.2: NEW JERSEY POPULATION PROJECTIONS AND OBSERVED GROWTH FOR THE CURRENT TIME PERIOD

	Time Period	Compound Annual Growth Rate
Economic Demographic	2012-2017	0.395%
Historic Migration	2012-2017	0.359%
Averaged	2012-2017	0.377%
U.S Census Bureau Estimates	**2012-2015**	**0.307%**

Over the 10 year Prospective Need period (2015 – 2025), the average of the Economic Demographic and Historic Migration model utilized by ESI yields a compound annual growth rate of 0.33%, which is higher than observed population growth over the past three years.

Seventh, Art Bernard's March 24th report asserts that the Economic Demographic model is "more attuned to the trend of growth that has actually occurred in New Jersey" (12). We wholly disagree. As suggested by its name, the historic migration model directly accounts for the past trend of population migration, rather than projecting it based on employment forecasts, as is done in the Economic Demographic model (and both models share the same projections about births and deaths). Therefore, the Historic Migration model is by definition attuned to the past trend of population growth, where the Economic Demographic model is not. In addition, as shown above and in ESI's full review of projections in its *Need and Obligations* report, observed population growth from recent years is far more in line with the Historic Migration model than the Economic Demographic model.

In sum, as described in our February 19th *Response to Comments* report:

> ESI carefully considered the relevant data and precedents, devised an approach that appropriately maintains the Prior Round methodologies of averaging two population models, and utilized a simple and reasonable calculation for the distribution of that population. Our method is as close as possible to the Prior Round approaches, (closer certainly than Dr. Kinsey's method) and more thoroughly embraces the spirit of checks and balances and is more in line with observed recent population trends, which are significantly lower than either population forecast used in this matter. It is also important not to lose sight of that fact that both models have historically projected population growth substantially above the growth that has been actually measured.
>
> [ESI February 19th *Response to Comments* report, p. 26]

2.2.2 HEADSHIP RATE AND HOUSEHOLDS

Once population projections have been determined, they must be translated into a projection of households, which ultimately form the base unit for estimating incremental housing need. This step is undertaken first by subtracting from the total population those residing in group quarters, leaving the "population in households," and then estimating the "headship rate" to determine the number of households that population represents. The headship rate is defined as the proportion of the population

that is the head of a household, or alternately can be thought of mathematically as the number of households divided by the population in households (i.e. the inverse of average household size).

ESI's December 30th *Need and Obligations* report undertook this calculation using 2014 ACS data as the most up to date data source on the current headship rate. The current headship rate by county and age cohort was compared to the rate from Census 2000 to determine the trend in each cohort, which was extrapolation forward over the Prospective Need period dampened by one-half, in accordance with the Round 2 methodology.

Responses to ESI's report submitted on January 29th by FSHC experts Dr. Kinsey and Daniel McCue raised issues regarding the comparability of Census and ACS data in determining an appropriate trend. ESI's February 19th *Response to Comments* report reviews those critiques, and agrees with them on the question of the direct comparability of Census and ACS household counts (which are used to calculate the headship rate). Accordingly, ESI's March 24th *Need and Obligations* report adopts the headship rate calculation for 2014 set forth by Dr. Kinsey in his January 22nd alternative gap model submission, which used a "correction ratio" to address the comparability issue while continuing to utilize the most up to date data.[15]

While there is basic agreement between the parties on the current headship rate, the appropriate method for projecting headship rates over the Prospective Need period (2015 – 2025) remains in dispute. Dr. Kinsey's model deviates from the Round 2 methodology by assuming a constant headship rate by age cohort and county over the Prospective Need period, while ESI's follows the methodology in applying the trend from the prior period by age cohort and county, dampened by one-half.[16] The January 29th and March 24th submissions of Dr. Kinsey, Daniel McCue and Art Bernard present a variety of arguments on this point, which are addressed at length in Section 3.1.2 of ESI's February 19th *Response to Comments* report and are reviewed and expanded upon below.

Headship Rate Trend

March 24th submissions from Art Bernard and Daniel McCue each suggest that the Round 2 methodology of extrapolating the headship rate trend forward (at half the rate of change) through the Prospective Need period should be discarded in favor of an assumption of a flat headship rate by age county and cohort, as is done in the Kinsey model. Their critiques are reviewed in turn below.

---

[15] Briefly, Dr. Kinsey's method "re-bases" 2010 ACS data to the household count reported in the 2010 Census (using the "correction ratio"), then applies the observed change from the 2010 ACS to the 2014 ACS to the re-based household count. As noted by Dr. Kinsey, this method has the advantage of "combining the most reliable data, the decennial Census, with the most recent data, from ACS" (Kinsey Gap Period report, p.25) and resolves the issue of the comparability of headship rates over time. This calculation is discussed in more detail in Dr. Kinsey's January 29th and March 24th reports, in Section 3.1.2 of ESI's February 19th *Response to Comments* report, and in Section 4.3 of ESI's March 24th *Need and Obligations* report.

Dr. Kinsey's March 24th model maintains this conceptual approach, but includes a technical change in the calculation of this "correction ratio" between Census and ACS data. Since ESI has adopted Dr. Kinsey's January 22nd calculation, this change would have implications for ESI's calculations as well. The implications of this change are discussed later in this section.

[16] As explained in footnote 26 of ESI's *Need and Obligations* report (page 37), the Round 2 assumption of applying half the rate of change over a decennial Census period was translated to the relevant observation and projection periods by applying 40% of the rate of change observed from 2000 – 2014 to the projection for 2025.

Mr. Bernard's argument hinges on misrepresenting the trend from 2000 – 2014 by focusing on the overall rate (which incorporates population aging, a factor that is separately accounted for the in the methodology) rather than the trend within county and age cohort, which is the relevant methodological question. For example, he writes:

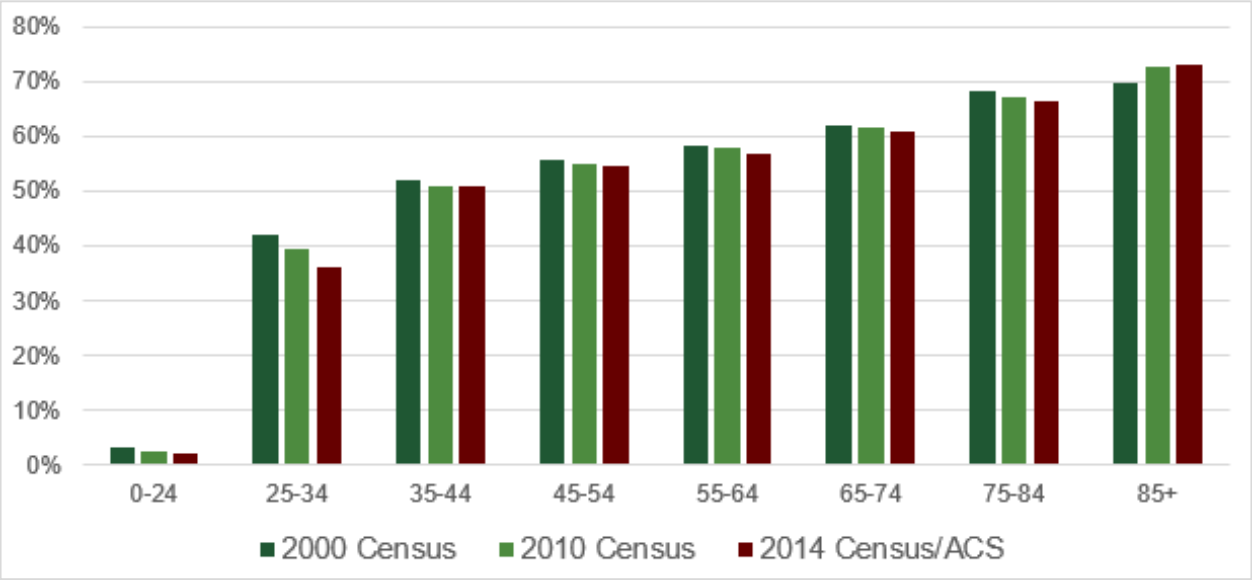
> At page 30 of his February 19th report, Dr. Angelides criticizes Dr. Kinsey/FSHC for ignoring the long term trend of declining headship rates. The time frame associated with Dr. Angelides use of *long-term headship rates* is 2000-2014. But, Dr. Angelides ignores his own findings: the census, which he acknowledges is a more accurate source of headship rates, actually shows that headship rates increase from 2000 to 2010 (at page 37 of his December 30, 2015 report). It is only less reliable ACS that shows a declining headship rate….
>
> Dr. Angelides…specifically ignores the increase in headship rates displayed by the most reliable data source...
>
> [Bernard March 24 Report, p. 14]

While Mr. Bernard quotes from page 30 of ESI's February 19th *Response and Comments* report, his review of our discussion of the headship rate appears to have ended halfway through that page. Our report goes on to explain the distinction between the two drivers of statewide headship rate change:

> As discussed in Section 4.3 of ESI's Need and Obligations report, there are two components that drive the future trend in headship rates:
>
> 1) Broad trends in headship rates within age cohorts
>
> 2) Population shifts impacting the distribution between age cohorts
>
> …Within the context of the fair share methodology (both the Kinsey version and ESI version), the between age cohort shifts are incorporated into the population projections. The question of headship rate trend projection is therefore isolated to the first effect, the within cohort change.
>
> [ESI Feb 19th *Response to Comments* Report, p. 30-31, emphasis added]

As explained in the February 19th report, while the statewide headship rate is relatively stable over the prior period, this stability is in fact the result of two counteracting trends. Population aging (a shift in the distribution *between* age cohorts) has increased the statewide headship rate (since older households tend to have a smaller household size), while the downward trends in headship rate *within* age cohorts have offset this effect. Mr. Bernard's insistence that "it is only less reliable ACS data that shows a downward headship rate" is directly contradicted by the headship rate by age cohort chart shown on page 32 of ESI's *Response to Comments* report, and reproduced below:

NEW JERSEY HEADSHIP RATES BY AGE COHORT



[Reproduced from ESI Feb 19th *Response to Comments* Report, p. 32]

The chart above directly compares 2000 and 2010 Census data, as well as Dr. Kinsey's January 22nd calculation of 2014 headship rates based on ACS data "corrected" for comparability with the Census. Declining headship rates are not isolated to the ACS data – they are present in the 2000 – 2010 Census period for seven of the eight age cohorts (all but 85+). Further, the corrected ACS 2014 data shows not a divergence but a smooth continuation of the trend in each of the eight age cohorts. **Mr. Bernard's claim in simply factually incorrect with respect to the relevant trend, the headship rates by county and age cohort.**

McCue's March 24th report offers a more generalized critique of applying a headship rate trend, which generally attempts to cast doubt on the validity of the trend identified clearly in Census data and by Dr. Kinsey's own methodology. For example, his report posits:

> …holding headship rates constant is a reasonable solution to mitigate the effects of survey error in the ACS data rather than expand them by introducing any wrongly identified trends in headship that could easily result to great impact on household projections
>
> [McCue March 24 Report, p. 2, emphasis added]

We strongly dispute the notion that the clear headship rate trend by age cohort has been "wrongly identified." As shown above, this trend is clear in each and every age cohort under the age of 85, and it is clear across both decennial Census and American Community Survey data.[17]

[17] As shown in Figure 4.4 on page 38 of ESI's *Need and Obligations* report, ACS data shows a consistent decline in headship rates from 2005 to 2014.

McCue's March 24th report also echoes his January 29th report in its discussion of margins of error, and confidence intervals associated with the ACS data in an attempt to introduce more doubt that trends are "wrongly identified." This issue was addressed at length in ESI's February 19th *Response to Comments*:

> McCue devotes several pages to an analysis of statistical significance and confidence bands in order to assert that ESI is "using highly imprecise data without displaying margins of error" (7). We recognize that McCue's response and expertise are confined to this single issue and not the entire fair share methodology, but this criticism could apply equally to virtually any component of the calculation (and to equally to Dr. Kinsey's model). As Dr. Kinsey is well aware, the Census and ACS data employed throughout the Kinsey Model, the ESI Model and the Prior Round methodology all come with a margin of error and are all understood to be imperfect. Nowhere in any model is that margin of error incorporated into the calculation, and nowhere is the best available data and most up to date rejected due to a rigorous statistical significance analysis. Each of the modelers involved is deeply familiar with principles regarding mid-point estimation and the associated margin of errors, but is ultimately responsible for producing a defined estimate and not a range, and as such must accept and utilize the best estimates from the most appropriate data source.
>
> [ESI February 19th *Response to Comments* report, p. 34]

McCue and Kinsey's January 29th submissions each (incorrectly) advanced the argument that the headship rate change is contained entirely in the 2010 – 2014 period, and is thus likely a produce solely of economic conditions during that time (which they argue are unlikely to be maintained moving forward):

> …recent losses from 2010 to 2014 are <u>short term and related to the economic recession</u> and the housing bust.
>
> [Jan 29 McCue response, p. 11, emphasis added]
>
> There is no basis to assume that this recent trend from 2010 to 2014 will continue ad infinitum into the future, as Econsult does. Econsult's methodology <u>would suggest a continually worsening recession</u> in New Jersey for the next decade in which the economy continues to get worse than its already historic lows over the past few years.
>
> [Jan 29 Kinsey response, p. 15-16, emphasis added]

Importantly, McCue's March 24th argument appears to have retreated from this position. Instead, it now discusses the breath of factors beyond economic conditions that impact headship rates over time:

> At different age groups, headship rates are also subject to changes due to both short- term and long-term trends. Short-term trends are cyclical and include effects of economic recessions which act to depress headship rates of young adults until employment situations improve and raise rates back up at older ages. <u>Long-term changes have also occurred within some age groups at a more gradual level over time based on more slow-moving cultural shifts. Such trends include a downward drift in headship rates of the youngest adults in their early 20's, who (are) staying in school longer and getting</u>

> married at older ages; as well as an increase in headship and housing independence among the oldest adults who are staying healthy longer and when receiving care are more likely to receive it at home. Meanwhile, headship rates of middle ages have remained largely unchanged over the past decade.
>
> [McCue March 24 Report, p. 11, emphasis added]

This passage echoes the headship rate discussion presented in ESI's *Need and Obligations* report, which explains that these rates are driven by a variety of factors that are not necessarily cyclical:

> Headship rates can vary due to a variety of social, economic and demographic factors. Headship rates are positively correlated with age (most notably because children are rarely the head of a household, but also generally continuing to increase throughout working years and into retirement years), so a projection of future headship rates must take into account the changing age distribution of the population (the New Jersey population has in aggregate been aging for years and is projected to continue to do so). However, headship rates within age cohorts may also change moving forward for several reasons. These reasons include economic factors, such as student debt and economic challenges which have caused an uptick in the proportion of the millennial generation staying in or moving back into their parent's households. They also include long-term societal and generational trends like longer and healthier lifespans (which reduce the proportion of widows and sole householders among the elderly) and the continued increase in the age of first marriages and children.
>
> [ESI *Need and Obligations* report, p. 36, emphasis added]

As explained in our February 19th report:

> In New Jersey, all indicators are that the confluence of these factors has produced a declining headship rate within age cohorts. This is true for virtually all age cohorts, and it is true over an extended period of time (2000 – 2014) that notably includes a complete boom and bust business cycle. As explained above, the headship rate is not purely driven by the economy, but by broad societal factors as well.
>
> [ESI February 19th *Response to Comments,* p.33]

The durability of these trends is central to the appropriateness of extrapolating them forward, in accordance with the Round 2 methodology. Importantly, unlike the LMI rate discussed in the Section that follows below, there is no statistical "median" constraint on the headship rate, or some "natural" rate to which the headship rate must by definition return. As societal preferences, health care, and other factors change, so does the headship rate for a given age cohort**. The Round 2 methodology recognizes the importance of these long-term shifts, and therefore carries them forward** while dampening the rate of change by one-half to provide a more conservative approach that in effect "splits the difference" between applying the trend fully and assuming no trend.

We continue to consider this methodology to be entirely appropriate, and have applied it in our March 24th *Need and Obligations* report, adjusted to reflect Dr. Kinsey's January 22nd calculation of the headship rate as of 2014, and the resulting 2000 – 2014 trend.

Comparison of Household Growth Estimates

The discussion above reviews in detail the reasons that ESI has followed the Round 2 methodology in 1) averaging the Economic Demographic and Historic Migration population models in developing a population forecast and 2) applying a trend in the observed headship rate in developing a headship rate forecast. Dr. Kinsey's March 24th model (consistent with his prior models) utilizes only the Economic Demographic population model, and assumes a constant headship rate by age a county cohort (a decision that Dr. Kinsey repeatedly characterizes as "conservative." It is worth considering the output of these two methodological approaches to evaluate their reasonableness.

Table 2.3 below shows total and annualized household growth over the gap period (1999 – 2015), as calculated in Dr. Kinsey's March 24th model, in comparison to household growth over the Prospective Need period (2015 – 2025), as reported in the March 24th Kinsey and March 24th ESI models.

- According to Dr. Kinsey, **total household growth over the gap period was 212,000, or 13,250 households per year** (over the 16 year period)
- Dr. Kinsey's methodology projects an increase of **nearly as many total households (205,000) over the upcoming 10 years as in the previous 16, averaging 20,470 per year**.
    - Dr. Kinsey's model includes an increase in the headship rate from 37.1% in 2015 to 37.7% in 2025 due to changes in the population distribution between age cohorts (which are not counteracted by changes *within* age cohorts, which are held constant).
    - As a result, the a comparison of the projected increase in population in households and households shows that the headship rate among the incremental population is greater than 50% in the Kinsey model (with 205,000 new households emerging from a population in household increase of approximately 404,000).
- ESI's methodology projects an increase of 137,500 total households over the upcoming 10 years, or 13,750 per year, slightly higher than the observed annual total over the past 16 years.
    - Headship rate within the ESI model increases to 37.4%, with *between* age cohort distribution changes partially, but not entirely, offset by the *within* age cohort trends carried forward at one half the rate of change from 2000 – 2014.

TABLE 2.3 COMPARISON OF ANNUALIZED HOUSEHOLD GROWTH IN ESI AND KINSEY MODELS

	Kinsey Gap Period (1999 -2015)	Kinsey Prospective Need Period (2015-2025)	ESI Prospective Need Period (2015 – 2025)
Total HH Growth	211,954	204,675	137,490
Annualized Change	13,250	20,470	13,750
Headship Rate (end year)	37.1%	37.7%	37.4%
Headship Rate (incremental Pop in HH)	35.0%	50.7%	46.9%

The comparison of gap period and Prospective Need period household growth again illustrates the importance of accounting for both within age cohort change and between age cohort distribution in developing an appropriate projection of headship rates. As explained in *ESI's* February 19th *Response to Comments* report:

> The population of New Jersey has already been aging. This effect is not new. Concurrently, the within cohort headship rate has been in steady decline, for virtually all age cohorts, in both the Census and ACS data. According to the Census data, these two effects have been roughly in balance, producing a relatively steady statewide headship rate. The "conservative" approach advocated by Dr. Kinsey and McCue is to disregard the within cohort trend entirely over the Prospective Need period while accounting for the further aging of the population. In other words, they seek to account for only one side of the equation.
>
> [ESI February 19th *Response to Comments* report, p. 33, emphasis added]

Revised Kinsey 2014 Headship Calculation

As noted above, ESI's March 24th *Need and Obligations* report and March 24th *Gap Period Calculation* each adopt the approach undertaken within Dr. Kinsey's January 22nd "Alternative Gap Model" to adjusting 2014 headship rates reported by ACS for comparability with 2010 Census data. Dr. Kinsey's March 24th model includes a similar approach to this issue, but a technical change in the estimation of 2014 headship rates that results in a slightly lower statewide headship rate for 2014. Incorporating this change into ESI's methodology would thus result in a slightly lower calculation of incremental household growth during the gap period. It would also result in a slightly lower projection of household growth over the Prospective Need period, since the downward 2000 – 2014 headship rate trend by county and age cohort carried forward to the Prospective Need prior period is slightly steeper in the revised calculation.

Daniel McCue and Dr. Kinsey explain this calculation and its revisions as follows in their March 24th reports. The underlined portion from the McCue report represents the change from the January 22nd methodology, which applied the "correction ratio" between Census and ACS data described below by county and age cohort, rather than evenly across age cohorts by county:

> The methodology for projecting households using constant 2014 ACS-based headship rates first involves a small number of steps to generate headship rates at the 10-year age group level for each county. The first step involves adjusting household counts to account for known differences between ACS and decennial Census data to make ACS counts more consistent with decennial Census counts, and also in order to maintain consistency with past measures that have been based on decennial Census data. This involves first comparing household counts between the 2010 one-year ACS and the 2010 decennial Census at the county level, and creating multipliers that make ACS one-year household counts for each county in 2010 equal to those from the 2010 decennial Census, creating a baseline that matches the less reliable ACS data to the more reliable Census data from a parallel time period. These multipliers are then applied to ACS 2014 household county household counts evenly across age groups to inflate the number of households up to higher levels that can be assumed to be more comparable to those from the decennial Census.

[McCue March 24th report, p.7, emphasis added]

First, the ratio of households estimated by ACS in 2010 to actual households counted by the 2010 Census is calculated, by county and age group. This ratio calculation is a slight change from the FSHC previous submission in February 2016 Gap Period calculations and leads to a significant decrease in Gap Period Prospective Need of approximately 13,000 units, which resulted from revisiting the Gap Period methodology more closely in accordance with the Regional Special Master's recommendation. Based upon further review of the challenges of using ACS data by FSHC's expert on headship rates, Daniel McCue, which is described in more detail in his separate expert report being filed concurrently we now believe that this more conservative method of adjusting ACS data, with a lower margin of error, is preferable.

[Kinsey March 24 Report, p. 32-33]

ESI does not consider this revision to be unreasonable, nor do we consider the January 22nd methodology adopted within our model to be unreasonable. As noted above, the revised calculation would have implications on both the gap period calculation and Prospective Need calculation submitted by ESI on March 24th.

Table 2.4 below shows the implications of substituting the incremental household growth of 212,000, as calculated in the March 24th Kinsey report, for the incremental household growth of 219,000 from Dr. Kinsey's January 22nd calculation utilized in ESI's gap calculation, on the gap allocation by region. The regional allocation of 60,150 calculated in the March 24th ESI gap report would be reduced to 57,590 (prior to the application of secondary sources and municipal caps), with slight decreases in each region.

TABLE 2.4: ESI REGIONAL GAP CALCULATION OVERVIEW, ADJUSTED FOR REVISED KINSEY HOUSEHOLD PROJECTIONS

Calculation	Statewide	1	2	3	4	5	6
Incremental HH Growth (Kinsey Jan 22)	*218,970*	*56,060*	*31,080*	*41,630*	*41,980*	*36,170*	*12,050*
Incremental HH Growth (Kinsey Revised Mar 24)	211,950	54,170	30,390	41,770	41,040	33,980	10,600
(x) LMI Rate	39.85%	40.89%	40.40%	39.32%	39.62%	38.86%	39.14%
(=) LMI HH	84,460	22,150	12,280	16,420	16,260	13,200	4,150
(x) Significant Asset %	9.27%	6.98%	6.42%	11.74%	11.42%	9.63%	10.82%
(-) HH w/Assets	(7,850)	(1,550)	(790)	(1,930)	(1,860)	(1,270)	(450)
(=) Eligible LMI HH	76,610	20,600	11,490	14,490	14,400	11,930	3,700
(-) Present Need Overlap	(19,020)	(7,770)	(5,150)	(2,680)	(2,970)	-	(450)
(=) Unique Eligible LMI HH	**57,590**	**12,830**	**6,340**	**11,810**	**11,430**	**11,930**	**3,250**
Unique Eligible LMI HH using Kinsey Jan 22 HH Growth	*60,150*	*13,550*	*6,600*	*11,770*	*11,760*	*12,710*	*3,760*

Table 2.5 below shows the implications of substituting the headship rate for 2014 calculated in the March 24th Kinsey report (36.99%) for the headship rate for 2014 from Dr. Kinsey's January 22nd calculation (37.07%) utilized in ESI's Prospective Need calculation, on incremental household growth over the Prospective Need period. Incremental household growth from 2015 – 2025 falls from 137,490 to 122,110, due to a change in the estimated headship rate for 2025, which falls from 37.4% to 37.2% due to the steeper downward trend carried forward from the 2000 – 2014 period.[18]

TABLE 2.5: ESI REGIONAL HOUSEHOLD GROWTH ESTIMATES FOR PROSPECTIVE NEED PERIOD, ADJUSTED FOR REVISED KINSEY 2014 HEADSHIP RATE PROJECTION

	Based on Kinsey Jan 22nd 2014 Headship Estimate					Based on Kinsey March 24th 2014 Headship Estimate				
Region	**Headship Rate 2015**	**Headship Rate 2025**	**Households 2015**	**Households 2025**	**HH Increase 15-25**	**Headship Rate 2015**	**Headship Rate 2025**	**Households 2015**	**Households 2025**	**HH Increase 15-25**
1	36.9%	37.0%	824,560	868,310	43,750	36.9%	36.7%	822,460	862,790	40,330
2	36.7%	37.3%	703,400	735,970	32,580	36.6%	37.0%	702,660	731,520	28,860
3	35.8%	35.8%	451,520	473,180	21,660	35.9%	35.8%	451,640	472,900	21,260
4	37.6%	37.8%	587,300	604,160	16,860	37.6%	37.6%	586,280	600,830	14,550
5	37.8%	38.8%	468,450	489,160	20,710	37.6%	38.3%	465,840	482,230	16,400
6	38.9%	39.3%	222,780	224,720	1,930	38.7%	38.8%	221,160	221,870	720
State	37.10%	37.42%	3,258,010	3,395,500	**137,490**	37.01%	37.16%	3,250,030	3,372,140	**122,110**

[18] Notably, the incremental household growth of 12,200 per year yielded by this revision is still broadly in line with the annual household growth over the gap period of 13,250, as estimated by Dr. Kinsey.

2.3 ELIGIBLE LMI HOUSEHOLDS

This section reviews the definition and calculation of LMI households, the significant housing asset test, and the potential re-allocation of regional need used to define the incremental growth in eligible LMI households in each region over the Prospective Need period.

2.3.1 LMI DEFINITION AND CALCULATION

ESI has consistently identified Dr. Kinsey's treatment of the low and moderate income (LMI) rate as one of the foundational problems within the Kinsey methodology. Two fundamental problems have been identified.

First, the methodology incorrectly projects a shift in the statewide LMI rate over the Prospective Need period by accounting for shifts in the population distribution (which are projected to decrease incomes due to aging effects) without accounting for the statistical impact of those same population shifts on the median income, against which the LMI standard is defined. ESI's September 24th *Review and Analysis* report for NJLM identified the shifting LMI rate in Dr. Kinsey's July 2015 26 year model (from 41.2% in 1999 to 43.3% in 2013 to 45.0% in 2025) as responsible for approximately half of the Prospective Need calculated by Dr. Kinsey, and for the classification of 77% of incremental households over the 26 year period as LMI. The Regional Master's October 30 *Preliminary Review and Assessment* report described this as a "very significant methodological issue" that "requires an adjustment to the foundation of Dr. Kinsey's prospective need estimate" (12).

Second, the methodology incorrectly assigns median income thresholds by household size, based on 1) the application of a *family* income standard to *household* income data, and b) a fixed "multiplier" for estimated median income by household size. This approach results in "median income" thresholds by household size and region that bear little relationship to actual median incomes by household size in each region, resulting in LMI rates that vary widely by household size. Section 4.4.1 of ESI's *Need and Obligations* report demonstrates that Dr. Kinsey's July 2015 methodology identifies 65% of 1 person households as LMI as of 2014, and conversely identifies far less than 40% of 2-5 person households as LMI, based on a faulty median income definition which fails to set the median at the level at which 50% of households are above and below it by household size.

As explained at length in that report, this problem is not only statistical but definitional, as it plainly fails to execute the definition of LMI households in the Fair Housing Act, which defines moderate income housing as "reserved for occupancy by households with a gross household income equal to….less than 80% of the median gross household income for households of the same size within the region in which the housing is located" (FHA, Section 304(d)). Accordingly, ESI's *Need and Obligations* report replaces the HUD/COAH income standards utilized in the Kinsey methodology with a threshold set at 80% the median income observed in ACS data by household size and region, in accordance with the FHA definition. The application of this standard results in a stable LMI rate of approximately (but not exactly) 40% in each region.

Dr. Kinsey's January and March submissions to the Court have executed the same methodology with respect to the LMI rate, but have utilized updated income standards based on HUD's most recent median income thresholds.[19] As explained by Dr. Kinsey in his January 22nd gap period submission, updated HUD data has eliminated the significant shift in the statewide LMI rate over the gap period that was embedded in Dr. Kinsey's July 2015 methodology:

> It so happens that when this calculation is made, it results in a significantly lower share of LMI households as of 2015 than the share of LMI households calculated in the July 2015 Model based on 2013 data. Statewide, the ACS data as adjusted for 2015 income limits shows 41.3 percent of households are LMI, as compared to 43.3 percent for ACS data. This 41.3 percent figure happens to be almost exactly the same as the 41.2 percent of households that were LMI as of the 2000 Census long-form data. Thus, LMI households remain a relatively constant share of total households in this alternative gap period model based on this new methodology, which is the primary reason that the prior cycle prospective need methodology produces lower 1999-2015 prospective need than the July model.
>
> [Kinsey Gap Period Submission, p. 28, emphasis added]

As explained at length in ESI's February 8th *Analysis of the Gap Period* report, this revision has major implications in the context of Dr. Kinsey's methodology:

> This discovery is, to put it mildly, not a small matter in the context of the Kinsey model….As previously referenced, the upward shift in the LMI rate in Dr. Kinsey's model to 45% is responsible *by itself* for approximately half of the Prospective Need estimated by Dr. Kinsey over the 26 year period….Dr. Kinsey now reports in the context of his January 22nd gap model that the significant increase in the LMI proportion from 41.2% in 1999 to 43.3% in 2013 in his original model, from which he extrapolates to the still higher LMI proportion of 45.0% in 2025 (albeit incorrectly due to the statistical properties of the median, as ESI has explained a length) **has now been effectively eliminated based on a correction issued by HUD.**
>
> [ESI February 8th *Analysis of the Gap Period*, p. 22-23, emphasis in original]

Art Bernard's March 24th report asserts that since Dr. Kinsey's updated HUD calculation does not include a material shift in the LMI rate across the gap period, the definitional issue has been addressed:

> Dr. Kinsey's forthright explanation of HUD's change in the calculation of low and moderate income addresses the issue of HUD's standards resulting in a disproportionate share of low and moderate-income households….the use of the HUD modified calculation is a common sense solution…"
>
> [Bernard March 24 Report, p. 18-19, emphasis added]

We vigorously disagree with Mr. Bernard's declaration of "problem solved." First, whether or not the statewide LMI rate is shifting over the gap period, the LMI rate in the Kinsey methodology remains

[19] Dr. Kinsey explains this update at length on pages 26-27 of his January 22nd Alternative Gap Period report. In summary, he writes, "HUD calculated median incomes for New Jersey starting in 2015 based on taking prior year ACS data and inflating it via the Congressional Budget Office's projection of Consumer Price Index increase.

incorrectly specified with respect to the FHA definition of LMI. Secondly, the shifting LMI rate problem has not been resolved with respect to the Prospective Need period (2015 – 2025). Indeed, Dr. Kinsey's March 24th methodology includes an increase in the statewide LMI rate from 41.4% in 2015 to 43.0% in 2025, resulting in a calculation that 68% of incremental households in the period will be LMI. Thus, **the revised calculation has plainly does not "address the issue of HUD's standards resulting in a disproportionate share of low and moderate income households" over the Prospective Need period.**

It is worth reviewing in brief the statistical origins of both the income threshold specification problems and median adjustment problems in Dr. Kinsey's methodology, which have been reviewed at length in previous ESI submissions.

Income Threshold Specification

With respect the specification of the LMI threshold, two major problems emerge from the application of HUD/COAH standard to the current population. The first has been identified by Special Master Richard Reading in his October 30th *Preliminary Review and Assessment* as the "intermixing of data sources." As explained in Section 4.4.1 of ESI's *Need and Obligations* report "A HUD standard, which uses median *family* income, is used to establish an income threshold against which median *household* income is compared "(41). As Special Master Reading explains on page 25 of his October 30th report, "these are different sources that are compiled for different purposes," and their comparison in order to establish an LMI income proportion is conceptually and mathematically problematic.

The second specification problem, discussed at length in ESI's *Need and Obligations* report and February 19th *Response to Comments* report, is the methodology utilized to estimate median income for households of various sizes. Rather than deriving a unique median for each household size from government data sources, the estimated median for a family of four is simply multiplied by a fixed factor to adjust the estimate up for households larger than four and down for households smaller than four, and the LMI threshold is set at 80% of the resulting calculation of "median income" for each household size. As explained in ESI's February 19th report:

> This approach fails to accurately capture, or even approximate, the observed distribution of median incomes by household sizes for each of New Jersey's housing regions, meaning that the proportion of households below this "median" vary wildly. Further, the definition fails to yield a statewide or region-wide median income which 50% of households are above and below, failing the very definition of a median.
>
> [ESI *Response to Comments* report, p. 38]

Dr. Kinsey's updated calculation relies on the same methodological approach, and accordingly, has addressed neither of these definitional problems. Tables 2.6 and 2.7 below update Table 4.8 and Table 4.9 from ESI's *Need and Obligations* report with the new median income and LMI thresholds utilized in Dr. Kinsey's updated LMI rate calculation. This analysis utilizes the same ACS data used by Dr. Kinsey to determine the proportion of the population, by household size and region, that is below the median and LMI income thresholds defined by HUD and utilized in Dr. Kinsey's methodology. As these tables illustrate, the updated HUD income limits still fails to appropriately specific the median income by

household size and region. For example, 73% of one-person households statewide fall below the estimated one-person median household income, while far less than 50% of 2-5 person households fall below the limit. Thus, **the "fixed multiplier" methodology continues to fail to accurately represent actual median income by household size.** Accordingly, the LMI threshold set at 80% of this flawed median yields a flawed LMI rate by household size, with 63% of one-person households qualifying as LMI and far less than 40% of two to five person households.

TABLE 2.6: PROPORTION OF HOUSEHOLDS BELOW KINSEY UPDATED HUD/COAH MEDIAN INCOME BY HOUSEHOLD SIZE BY REGION AND STATEWIDE, 2014

		Household Size							
Region	**State**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8+**
1	50.4%	69.6%	44.0%	43.8%	41.4%	46.2%	46.2%	52.2%	66.3%
2	52.9%	74.8%	45.4%	44.6%	39.6%	46.8%	50.6%	62.7%	57.5%
3	50.9%	72.5%	47.8%	44.3%	37.6%	44.5%	40.1%	77.5%	62.4%
4	52.3%	75.5%	46.2%	41.1%	40.3%	38.9%	53.3%	57.4%	57.2%
5	47.2%	74.7%	40.8%	35.6%	31.1%	40.0%	45.0%	42.7%	29.7%
6	51.6%	72.5%	43.5%	43.5%	37.8%	52.4%	61.4%	73.2%	37.0%
State	**51.0%**	**73.2%**	**44.7%**	**42.4%**	**38.6%**	**44.3%**	**48.5%**	**59.9%**	**56.2%**

TABLE 2.7: PROPORTION OF HOUSEHOLDS BELOW KINSEY UPDATED HUD/COAH LMI THRESHOLD BY HOUSEHOLD SIZE BY REGION AND STATEWIDE, 2014

		Household Size							
Region	**State**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8+**
1	41.2%	60.3%	34.8%	35.4%	32.1%	37.1%	34.6%	50.0%	39.5%
2	43.2%	63.7%	36.3%	34.7%	30.3%	38.1%	48.2%	44.3%	55.0%
3	40.4%	62.0%	37.5%	32.3%	27.6%	33.3%	33.5%	72.3%	55.6%
4	42.2%	66.7%	34.8%	30.4%	30.3%	32.5%	40.9%	51.0%	45.1%
5	37.4%	64.5%	31.5%	25.1%	22.9%	29.3%	30.5%	36.7%	21.3%
6	42.8%	64.5%	33.1%	36.4%	29.5%	41.9%	58.1%	52.5%	35.6%
State	**41.3%**	**63.4%**	**34.9%**	**32.6%**	**29.2%**	**35.2%**	**39.2%**	**51.3%**	**44.5%**

As such, this methodology (still) fails to satisfy the definition of LMI housing contained in the Fair Housing Act, which reads:

> "Moderate income housing" means housing affordable according to federal Department of Housing and Urban Development or other recognized standards for home ownership and rental costs and occupied

> or reserved for occupancy by households with a gross household income equal to more than 50% but less than 80% of the median gross household income for households of the same size within the region in which the housing is located.
>
> [Fair Housing Act, Section 304(d), emphasis added]

This standard clearly is not met by the Kinsey methodology, which utilizes family income rather than household income, and as demonstrated above simply does not identify as LMI those households with an income less than 80% of the median income for households of the same size within the same region. Accordingly, ESI's *Need and Obligation* approach implements the FHA definition, by using 2014 ACS data to determine the median household income by household size and region, and setting the LMI threshold at 80% of that observed median. While Dr. Kinsey and Art Bernard have each asserted in various response reports that this definition does not represent a "recognized standard" for the definition of LMI, it is the standard spelled out plainly in the Fair Housing Act itself.

Median Income Adjustment

Above and beyond its problematic specification of the LMI thresholds as of 2014, the Kinsey methodology introduces another problem in its projection of LMI rates over the Prospective Need period, which ESI has described as the "median income adjustment." This problem continues to plague Dr. Kinsey's methodology, irrespective of the updated calculation of the LMI rate as of 2014.

Dr. Kinsey's March 24th methodology projects that 43.0% of statewide households will be LMI in 2025, up from 41.4% in 2015. Art Bernard's March 24th report correctly identifies the causal mechanism for this shifting rate within the methodology:

> The use of HUD's income limits by age cohort to quantify lower income households results in more than 40 percent of all households qualifying as low and moderate income households. This result is because much of New Jersey's growth is anticipated to be in younger and older age cohorts – age cohorts in which a high percentage of households have lower income.
>
> [Bernard March 24 Report, p. 17, emphasis added]

As explained at length in Section 4.4.1 of ESI's *Need and Obligations* report, and in ESI's February 19th *Response to Comments*, the changing age distribution of the population would indeed change the income level of New Jersey households**. By definition, however, this change in income level would result in a change in the median income for the various regions**. It does not hold that estimated proportion of LMI households in each age cohort would remain constant as the median income itself changes:

> The Prior Round method projects future income levels by "carrying forward the income characteristics of all households...by age cohorts" (26 N.J.R. 2347). In the context of the methodology, this means that the estimated proportion of households that are LMI by age cohort and county at the beginning of the Prospective Need period is carried forward to the end of the Prospective Need period, at which time to relative proportions of those age and county cohorts in the State's population is projected to have

changed. This is not a mathematically sound approach for projecting county, regional or statewide incomes *relative to the median*.

Said another way, it may be reasonable to project that New Jersey's households will get poorer based on demographic changes. It does not follow from that circumstance, however, that New Jersey's households would be getting poorer relative to the median – since by definition, the median income itself is a statistical result of the income conditions of New Jersey's households….In a state with an aging population, applying the income shift caused by demographic changes without accounting for the accompanying effects on the median income is a clear mathematical flaw of the Prior Round methodology that will result in an overestimate of the LMI proportion of the population at the end of the Prospective Need period.

[ESI *Need and Obligations* Report, p. 49, emphasis in original]

Results within Kinsey Model

The continued problems with both the specification of income thresholds and the median income adjustment can be seen through a simple comparison of LMI rates and LMI household projections yielded by the March 24th Kinsey methodology over the gap period (1999 – 2015) in comparison to the Prospective Need period (2015 – 2025). As shown in Table 2.8 below:

- The Kinsey model shows a modest increase in the statewide LMI rate from 41.2% in 1999 to 41.4% in 2015, followed by a significant increase to 43.0% over the projection period.
- As a result, the model estimates that 68% of the incremental households over the Prospective Need period will be LMI
- When combined with Dr. Kinsey's problematic population and headship projections (reviewed in previous sections), this methodology projects **annualized LMI household growth of 13,850 over the Prospective Need period, greater than the annualized *total* household growth of 13,250 over the gap period**, according to Dr. Kinsey's own calculations.

TABLE 2.8 - KINSEY MODEL: TOTAL HOUSEHOLD AND LMI HOUSEHOLD GROWTH, GAP PERIOD AND PROSPECTIVE NEED PERIOD

	1999	2015	2025	Gap Period (1999 – 2015)	Prospective Need Period (2015-2025)
Total HHs	3,043,483	3,255,437	3,460,112	211,954	204,675
LMI HH	1,252,558	1,348,144	1,486,615	95,586	138,471
Effective LMI Rate	41.2%	41.4%	43.0%	45.1%	**67.7%**
Annual HH Growth				13,247	**20,468**
Annual LMI HH Growth				5,974	**13,847**

This methodology also produces aberrant results with respect to the age distribution of projected LMI households over the Prospective Need period. As explained above, Art Bernard's March 24th report notes that "much of New Jersey's growth is anticipated to be in younger and older age cohorts – age cohorts in which a high percentage of households have lower income" and Dr. Kinsey's methodology incorrectly assumes that the LMI percentage in the older age cohorts would stay fixed even as those cohorts represent a greater proportion of the population, which would by definition bring down the state and regional median incomes. As a result, Dr. Kinsey's methodology produces enormous and unprecedented growth in the projection of older LMI households over the projection period.

Special Master Richard Reading's October 30th *Preliminary Analysis and Review* noted that in Dr. Kinsey's July 2015 26 year Prospective Need methodology, elderly households (those with a head of household aged 65+) accounted for 71% (205,000 out of 285,000) of incremental LMI households of the 1999 – 2025 period. The Special Master concluded:

> The preponderance of elderly households…is a clear and incontrovertible indication of a flaw in the model and the methodology utilized….the methodology utilized does not produce an analytically reasonable or defensible result.
>
> [Reading Oct 30th *Preliminary Review and Assessment* report, p. 26]

Dr. Kinsey's March 24th submission now allows for a breakout of LMI household growth by age cohort for the gap period (1999 – 2015) separately from the Prospective Need period (2015 – 2025). The results of this calculation are shown in Table 2.9 below.

- For the gap period, elderly households represent 25% of incremental LMI household growth (roughly in line with the 32% of total households that they represent).

- For the Prospective Need period, **elderly households represent 117% of total household growth in the Kinsey model, with negative growth projected among under 65 LMI households.**

TABLE 2.9 - KINSEY MODEL: SENIOR AND NON-SENIOR LMI HOUSEHOLDS, GAP PERIOD AND PROSPECTIVE NEED PERIOD

	Gap Period (1999 – 2015)			Prospective Need Period (2015 – 2025)		
Region	Under 65 LMI HH Growth	65+ LMI HH Growth	Total Gap LMI HH Growth	Under 65 LMI HH Growth	65+ LMI HH Growth	Total Prospective LMI HH Growth
1	13,200	(5,001)	8,199	(430)	39,826	39,397
2	2,698	5,896	8,594	(9,272)	37,541	28,269
3	10,137	4,224	14,361	(4,854)	25,249	20,396
4	26,276	5,779	32,055	(2,048)	25,143	23,094
5	10,401	11,498	21,899	(3,623)	23,865	20,242
6	8,538	1,941	10,478	(3,012)	10,085	7,073
TOTAL	**71,250**	**24,336**	**95,586**	**(23,239)**	**161,710**	**138,471**
% of Total	**75%**	**25%**		**(17%)**	**117%**	

Needless to say, this methodological update does not produce an "analytically defensible or reasonable result." Rather than represent 71% of total household growth, which the Special Master characterized as "a clear and incontrovertible indication of a flaw in the model and the methodology utilized," elderly households now represent an absurd 117% of incremental LMI household growth over the 2015 – 2025 Prospective Need period in the revised Kinsey model. **The fact that this preponderance of elderly LMI households is not present in the gap period is a clear demonstration that it is tied to the failure of the Kinsey methodology to appropriately address the median income adjustment over the Prospective Need period.**

ESI's methodology, set forth in our *Need and Obligations* report, addresses the median adjustment problem by specifying the median income and resulting income thresholds by household size and by region in keeping with the FHA definition. The same LMI rates observed in 2014 can then be appropriately applied to the projected population distribution, by household size and region, for 2015 and 2025.[20] No explicit projection of increasing or decreasing income is required within this method, because as incomes increase of decrease, the median income will shift as a result of its statistical properties. By definition, therefore, approximately 50% of households will remain below the median, and approximately 40% below the LMI threshold in each region and household size. As explained in the ESI report:

> Changes in the median caused by an increase or decrease in incomes in New Jersey are thus "built-in" to the metric, because those changes will cause a corresponding increase or decrease in the median income level. As a result, absent a change in the distribution of incomes the proportion of households within a given household size and region will stay consistent…

[20] Note that because LMI rates are specified by region and household size, the ESI methodology does not contain an explicit estimate of LMI proportions by age cohort. As explained in Section 4.4.2 of ESI's *Need and Obligations* report, the population distribution by age cohort is translated into a distribution by household size prior to the estimation of LMI rates.

> The same principle that has been described with respect to population aging and its impact on the median also applies to changes in the distribution of population and households within a region comprised of counties of varying wealth levels…. To account for this, we aggregate households by household size at the regional level and apply the LMI proportion regionally, rather than applying proportions by county.
>
> [ESI *Need and Obligations* report, p. 48-50)

Summary

ESI has consistently identified the LMI definition within the Kinsey methodology as a core mathematical flaw, which drives in large part the aberrant results produced by the model. Special Master Richard Reading's October 30th *Preliminary Review and Assessment* report echoes this analysis, calling the shifting LMI rate a very significant methodological issue" that "requires an adjustment to the foundation of Dr. Kinsey's prospective need estimate" (12) and the preponderance of elderly LMI households produced by the methodology "a clear and incontrovertible indication of a flaw in the model and the methodology utilized" (26).

Dr. Kinsey's revised methodology includes an updated calculation of the LMI rate based on the latest HUD data. This calculation, previewed in his January 22nd alternative gap calculation, now indicates that "LMI households remain a relatively constant share of total households" (28) from which Art Bernard concludes in his March 24th report that revision "addresses the issue of HUD's standards resulting in a disproportionate share of low and moderate-income households" (18).

Factually, Mr. Bernard's assertion is simply incorrect. As review above, the revised Kinsey methodology yields the following results over the Prospective Need period:

- The statewide LMI rate increases from 41.4% in 2015 to 43.0% in 2025, resulting in an estimate that 68% of incremental households over the Prospective Need period will be LMI.

- Elderly (65+) households are projected to represent 117% of LMI household growth over the Prospective Need period, with negative growth projected among under 65 LMI households.

These results are clear indications of the continued mathematical flaws in the Kinsey Prospective Need methodology, in particular the failure to address the median income adjustment, which have enormous impacts on the Prospective Need calculation. Setting aside the aberrant results, however, we disagree that the updated finding of a relative constant LMI share over the gap period means that the LMI threshold has been specified correctly. Indeed, as described above, the HUD definitions still suffer from the intermixing of non-like data sources (family income and household income) and the application of a multiplier by household size disconnected from the observed data on median incomes. As a result, the specification of the median income and of LMI households by Dr. Kinsey in the gap period and Prospective Need period alike fail to meet the definition of LMI housing in the Fair Housing Act as that which is "reserved for occupancy by households with a gross household income equal to….less than 80% of the median gross household income for households of the same

size within the region in which the housing is located" (FHA, 304(d)). The methodology in ESI's *Need and Obligations* report addresses each of these problems, generating a mathematical accurate and intuitively reasonable and estimate of the LMI rate for each region.

It is worth noting that throughout the course of many exchanges since ESI first raised the issue of the median adjustment problem in our September 24th *Analysis and Review* report, Dr. Kinsey has at no point offered a direct defense of his method's statistical soundness. Nor at any point since ESI raised the issue of the aberrant results by household size in our December 30th *Need and Obligations* report has Dr. Kinsey offered a direct defense of the statistical results. Instead, on both fronts he has appealed to precedent alone, relying implicitly, and at times explicitly, on an absolutist interpretation of the requirement to develop a methodology "based on" the Prior Round method. Dr. Kinsey adds another component to this line of argument in his March 24th report, framing the standards as a matter of fairness:

> This analysis projects that, on a statewide basis, 43.0% of New Jersey HH will qualify as LMI, under the Prior Round methodology, in 2025. That is not a deliberate policy choice, but rather the result of applying the Prior Round methodology to the current facts at hand. In contrast, the past impact of applying the Prior Round methodology to the household growth patterns in the 1980s and 1990s, when increasing shares of the population were in younger, and less likely to be LMI HH age groups, was to create HH projections with LMI shares under 40%. It would be unfair to deviate from the Prior Round methodology in this area only when it led to lowering affordable housing need, when historically if COAH had applied the same deviation that would have actually raised affordable housing need, and COAH did not do so.
>
> [Kinsey Mar 24 report, p. 39]

Here Dr. Kinsey advances the notion that fairness demands the perpetuation of a thirty year old mathematical error, and that if COAH incorrectly projected LMI shares slightly under 40% (due to a relatively stable younger population), fairness demands that the fair share methodology project an LMI population well in excess of 40% now (due to a rapidly aging population). We disagree. Our principles are accuracy, statistical soundness, and identification of the LMI households as defined in the Fair Housing Act, and the methodology utilized within the Kinsey model plainly fails on all of these fronts.

2.3.2 HOUSEHOLDS WITH SIGNIFICANT HOUSING ASSETS

Special Master Richard Reading notes in his October 30th *Preliminary Review and Assessment* report that "the intent of the calculation of prospective need….is to define housing need for lower income households, not the total volume of LMI households" (26). Accordingly, it is appropriate to adjust the incremental growth in LMI households described above for the proportion of those households that are not eligible for affordable housing. This is achieved in the ESI *Need and Obligations* methodology through the application of the significant housing asset test. As described in that report, this standard excludes LMI households how are not in need of, or eligible for, affordable housing due to their significant housing assets:

> The 2001 Uniform Housing Affordability Controls (UHAC) under the FHA set forth rules concerning eligibility for affordable housing units, which specifically cite "equity in real estate" as a form of income to determine eligibility in N.J.A.C. 5:80-26.16(b)1. Each iteration of the Round 3 methodology adopted by COAH since UHAC was instituted has therefore included a "test" to determine the proportion of incremental LMI households who are will not be eligible for affordable housing, and indeed are not in need of it, due to their real estate assets.
>
> [ESI *Need and Obligations* Report, p. 52]

Dr. Kinsey and Art Bernard each object to the application of the significant housing asset test, since it was not included in the Round 2 methodology. However, as clearly noted in ESI's *Need and Obligations* report, the **UHAC regulations on which the test is based came into existence in 2001, well after the development of the Round 2 methodology**. Therefore, this does not represent a basis for the exclusion of this step.

> As explained in ESI's Need and Obligations report, the basis for the significant housing asset test is not the Prior Round methodology, but the Uniform Housing Affordability Controls (UHAC) regulations published in 2001. Since these rules post-date the Second Round methodology, they could not have been incorporated. Even FSHC's absolutist interpretation of the re-creation of the Prior Round methodology allows for (and in fact requires) the incorporation of statutes and regulations that have changed in the intervening years.
>
> [ESI February 19th *Response to Comments* Report, p. 44]

The exclusion of these households from the need also has conceptual justification going back to the *AMG Realty vs. Warren Twp* decision. In the portion of his opinion explaining the exclusion of cost-burdened households from the Present Need, Judge Serpentelli notes that:

> It must be recognized that many people of retirement age have developed substantial assets which allows them to acquire homes. However, based upon their reported income, they could nonetheless fall into the category of financial need at least within the Mount Laurel II definition
>
> [*AMG Realty Co vs. Warren Twp* at 423]

This concern applies equally to the Prospective Need increment, which is also based initially on reported income, and therefore requires a separate accounting for real estate assets.

Art Bernard's March 24th report also includes a discussion of additional costs facing seniors, most notably rising health care costs, as a justification for why households that a) own a primary residence valued at or above the regional asset limit published by COAH with no mortgage; and b) pay less than 38% of eligible monthly income on housing costs should be included as part of the need despite their ineligibility under UHAC. Mr. Bernard concludes this discussion as follows:

> I conclude that it is bad policy to decrease the housing obligation based on the elderly poor with assets when those assets are no doubt needed to pay for housing and health care.
>
> [Bernard March 24 Report, p. 23, emphasis added]

This statement is ironic given the continued complaints of FSHC, NJBA and their respective experts that the Fair Share methodology under Mt. Laurel IV is not intended to create new policy. In this instance, Mr. Bernard apparently believes his conclusions with respect to health care costs supersedes the UHAC regulations. We disagree.

Finally, it is important to understand the context of elderly households that fall into the LMI category, particularly in light of Dr. Kinsey's (flawed) finding that elderly (65+) households represent 117 percent of the need over the Prospective Need period. As the *AMG Realty* opinion points out, LMI standards are income-based, and retiree households quite naturally have lower incomes than they did during their working years. Nonetheless, many of these households have stable and sound housing situations, in particular those identified by the significant housing assets calculation who own housing free and clear of mortgage obligations. As Special Master Richard Reading notes in his application of the asset test in his October 30th *Preliminary Review and Assessment* report, "most of these elderly households are already housed, are aging in place and are not the households that are the target of Mount Laurel zoning initiatives" (27).

Notably, as discussed in ESI's February 19th *Response to Comments* report, this basic dynamic has previously been acknowledged by FSHC itself. The 2007 Appellate Court decision described FSHC's objections to the component of COAH's 2004 rules allowing municipalities to age-restrict 50 percent of their housing stock as follows:

> Fair Share contends that the sixty-one percent figure relied upon by COAH was based on a "fundamental methodological flaw" because it was not the result of thousands of lower income senior citizens migrating into New Jersey or new senior citizen households being formed, which households are in need of affordable housing." To the contrary, Fair Share asserts that solid data was available to show that only a small percentage of the households in the housing market for new housing are headed by an individual over sixty-five, or even over fifty-five, and that elderly households were "aging in place."
>
> [In re Adoption of N.J.A.C. 5:94 & 5:95, 390 N.J. Super. 1, 914 A.2d 348 Section C.2, emphasis added]

Ironically, Fair Share now submits a methodology that contends that 117 percent of Prospective Need is represented by elderly households, but acknowledges no "fundamental methodological flaw" in that calculation, and further now maintains that all of those households represent a new construction housing obligation under the Mount Laurel doctrine.

2.3.3 REALLOCATION OF REGIONAL NEED

COAH's Round 2 methodology undertook an additional step of re-allocating Prospective Need for non-elderly households across regions that was not undertaken in the Round 1 methodology. Section 4.6 of ESI's *Need and Obligations* report and Section 3.2.3 of our February 19th *Response to Comments*

report describe in detail ESI's reasons for following the Round 1 methodology in not undertaking this re-allocation. This explanation is reviewed in brief below, with additional commentary on the impact of the implications of this re-allocation for the gap period calculation undertaken in the March 24th Kinsey methodology.

ESI's *Need and Obligations* report explains and cites the rationale set forth in the Round 2 regulations for undertaking this step as follows:

> The rationale set for in the Round 2 methodology for the re-allocation of prospective need for households where the householder is under 65, but not those where the householder is over 65, is as follows:
>
> > Growth in the working-age component of low and moderate income households was assigned to regions where jobs previously grew. On the other hand, growth in the elderly and presumably non-working population was retained in the original region where this growth took place. This procedure creates a demand to house low and moderate income families of working age in locations where jobs grew and a similar demand to house the elderly where their growth occurred naturally.
> >
> > [26 N.J.R. 2347]
>
> Thus, the goal of the re-allocation of Prospective Need for householders under 65 is to match need with locations "where jobs grew." To do so, employment is not measured directly, but instead a proxy metric of the growth in non-residential property valuation (also called "ratables") from the prior period (in this case 1980 to 1990 is used).
>
> [ESI *Need and Obligations* Report p.55-56]

The *Need and Obligations* report then proceeds to list a variety of reasons this approach is problematic, both conceptually and in terms of the execution of the calculation.[21] Most importantly, **it is unclear that the calculation even achieves its aim of matching regional obligations with regional employment growth**. This mismatch arises for two reasons.

First, the re-allocation procedure seeks to determine where jobs grew in the past in order to allocate future affordable housing needs, rather than projecting employment change over the Prospective Need period. These projected changes in future employment, which are the changes relevant to allocating Prospective Need, as already built into the population forecasts from NJDOLWD's Economic Demographic model (which as reviewed in Section 2.2.1 forms the basis for the distribution of population growth projections over the Prospective Need period). In short, employment growth forecasts over the Prospective Need period are already built into the model – the re-allocation procedures overrides that distribution and replaces it with a distribution based on a backward-looking proxy for employment growth.

[21] These reasons are discussed in full on pages 56-57 of ESI's *Need and Obligations* report, and are not reviewed comprehensively in this section, which instead focuses and expands on the most relevant points.

Further, the proxy used for past employment growth is highly problematic. ESI's has reviewed the variety of problems with using non-residential "ratables" as a surrogate for employment growth at length in both this context and in the context of its use in the municipal allocation "responsibility" factors, and does so again in Section 2.4.1 below. Here, it is important to note that the non-residential ratable regional shares calculated by Dr. Kinsey do not align with government data on employment growth by region for the gap period. The accuracy of the re-allocation methodology in achieving its intended goal of aligning obligations with job growth is thus highly suspect even for the backward looking period. Logically, the application of those same shares forward to the projection period is even more suspect.

Table 2.10 below shows the regional distribution of non-residential valuation change from 1990 – 2015, as reported in the Kinsey model, against employment change from 1999 – 2015, from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW).[22] The QCEW data shows employment growth over the gap period concentrated in three regions (Regions 3, 4 and 5) while Regions 2 and 6 saw jobs losses, and Region 1 modest gains. The non-residential valuation change, by contrast shows the largest gains in Region 1. **Overall, the regional distribution of non-residential valuation change simply does not align with the distribution of employment change as reported by the BLS** (see Table 2.10).

TABLE 2.10 – CHANGE IN NON-RESIDENTIAL VALUATION VS. EMPLOYMENT BY REGION 1990 – 2015

Region	Non-Residential Valuation Change 1990-2015 ($B)	% of Statewide Change 1990 - 2015	Employment Change 1999-2015	% of Statewide Change 1999-2015
1	27.0	28.3%	4,403	3.0%
2	18.1	19.0%	(22,699)	(15.2%)
3	16.7	17.6%	33,184	22.3%
4	18.6	19.6%	102,224	68.6%
5	9.4	9.9%	33,570	22.5%
6	5.4	5.6%	(1,643)	(1.1%)
State	95.2	100%	149,039	100%

Thus, when Dr. Kinsey undertakes the redistribution of need for under 65 households in his gap period methodological, it has major distributional implications that are at odds with observed trends in employment over that period. Table 2.11 below shows the redistribution of the gap period allocation undertaken in this step based on the regional share of statewide non-residential ratables change from

[22] This data is reported by BLS at the County level, and then aggregated to the region. Average annual employment is used for 1999, and Q3 employment for 2015. While the problems with covered employment as a metric at the local level have been identified historically as it relates to the fair share process, the BLS data is a well-regarded and frequently cited metric at larger geographies, such as the county level.

1990 to 2015.[23] This procedure leads to drastic re-allocations of need across regions that are at odds with the observed employment change over the gap period. Most notably, Region 2 sees an increase in its under 65 allocation of 391% (adding more than 10,000), while Region 4 sees a decrease of 38% (decreasing nearly 10,000) based on the distribution of non-residential ratables in those regions, which purports to proxy job growth over this period. However, BLS data (shown in Table 2.10) indicates that Region 4 has in fact seen significant job growth, while Region 2 has seen job losses.

TABLE 2.11 – KINSEY GAP PERIOD (1999-2015) REGIONAL RE-ALLOCATION CALCULATION

Region	Regional Share of Under 65 HH Before Re-Allocation	% of Statewide non-residential Ratables Change 1990 - 2015	Under 65 Initial Allocation	Under 65 Re-Allocated Obligation	Net Change in Regional Allocation	% Chg in Regional Allocation for Under 65
1	18.5%	21.6%	13,200	15,364	**2,164**	16%
2	3.8%	18.6%	2,698	13,260	**10,562**	391%
3	14.2%	19.6%	10,137	13,955	**3,818**	38%
4	36.7%	23.0%	26,276	16,370	**(9,906)**	(38%)
5	14.6%	11.8%	10,401	8,431	**(1,970)**	(19%)
6	12.0%	5.4%	8,538	3,870	**(4,668)**	(55%)
State	100%	100%	71,250	71,250	**0**	0%

This mismatch is a strong indicator that non-residential ratables are simply not an adequate proxy for employment growth (a point which is explored further in ESI's discussion of municipal allocation factors in Section 2.4.1). Accordingly, **this regional re-allocation is highly problematic with respect to the gap period – the results of the procedure are the opposite of its intended effect of aligning regional obligation with regional job growth. There is little reason to think it is any more appropriate forward-looking**, where it requires not only that non-residential ratable growth is an accurate proxy for employment (which they are not), but that they are an accurate proxy for *future* employment growth. It is also worth re-iterating that while Dr. Kinsey intends to incorporate this step into his Prospective Need calculation, it is not executed in practice, because Dr. Kinsey's household growth estimates suggest that no growth will occur in under 65 households over the Prospective Need period (with 117% of growth taking place in elderly households), meaning that there is no need to re-allocate.

It is also important to re-iterate that while Dr. Kinsey and Art Bernard's reports characterize the omission of this step as an unacceptable deviation from the Prior Round methodology, the re-allocation of regional need was undertaken in Round 2 but not in Round 1. This differential is a prime example of the broader point made in the Section 2.4 of ESI's February 19th *Response to Comments* report, which

[23] Note that these percentages differ from those shown in Table 2.10 because they exclude urban aid municipalities. Urban aid municipalities are retained within the calculation in Table 2.10 to provide a more "apples to apples" comparison with the employment distribution. Both distributions are taken directly from Dr. Kinsey's March 24th model.

is that there is no single prior round method which can be followed "mechanically." As pointed out within that section, the Mount Laurel IV directive makes explicit reference to both the Round 1 and Round 2 methodologies as a basis for the Round 3 calculation:

> First, as we said in In re Adoption of N.J.A.C. 5:96 & 5:97, supra, previous methodologies employed in the First and Second Round Rules should be used to establish present and prospective statewide and regional affordable housing need. 215 N.J. at 620. The parties should demonstrate to the court computations of housing need and municipal obligations based on those methodologies.
>
> [Mt. Laurel IV, p. 41, emphasis added]

Dr. Kinsey acknowledges this point in his description of his own methodology in his March 24th report:

> While the Court referred to both the First and Second Round methodologies, the FSHC R3 Model follows COAH's Second Round methodology
>
> [Kinsey March 24 Report, p. 9]

In this revealing passage, Dr. Kinsey acknowledges that the absolutist adherence to the Second Round methodology that he claims (not always accurately) to undertake in his methodology is in fact not required by the Mt. Laurel IV decision, but instead represents one potential interpretation. ESI, by contrast, has not slavishly followed either methodology regardless of the logical consequences, but instead has developed the most accurate possible quantification of the Present Need and Prospective Need based on those methodologies, in accordance with the Mount Laurel IV. In this instance, due to the conceptual and calculation issues discussed in this section, we have followed the Round 1 methodology and have not re-allocated regional Prospective Need.

2.4 MUNICIPAL ALLOCATION OF REGIONAL NEED

This section reviews the employment, household income and developable land calculations used to allocate regional need to municipalities. ESI addresses our approach to the municipal allocation factors, which updates each component of the calculation to utilize the most appropriate, up to date and accurate data sources and approach, at length in Section 5 of our *Need and Obligations* report and Section 3.3 of our February 19th *Response to Comments* report. This section reviews that discussion briefly, addressing issues raised in the most recent submissions by Dr. Kinsey and Art Bernard.

Some broad methodological points are worth noting with respect to this calculation. First, it is important to note in the broader context of the fair share methodology that municipal allocation factors are used to distribute a fixed amount of regional need to the municipal level. Therefore, this step of the calculation is "need neutral" with respect to the aggregate need. This fact is notable in light of the accusation advanced in Dr. Kinsey's January 29th response report that ESI's "deviations" from the Prior Round

methodology are "all in service of lowering fair share numbers."[24] In the case of municipal allocations, the methodology by definition cannot increase or decrease fair share numbers. Nonetheless, ESI has implemented methodological improvements to the Prior Round method for each component. Clearly, these updates have been undertaken in the interest of accuracy.

These updates are thus in keeping with ESI's overall goal of producing the most accurate possible quantification of the Present and Prospective Need within the directives of Mt. Laurel IV. Among those directives, based on the Appellate Court's 2010 decision, is to use the "most up-to-date available data." Dr. Kinsey's March 24th report includes a passage discussing this directive:

> The Appellate Division in 2010 directed that "the most up-to-date available data" be used in calculating Third Round fair share obligations. We interpret Judge Skillman's directive to mean the "best" data, i.e., not necessarily the most recent data that might be otherwise flawed, problematic, unreliable, or inconsistent with other more reliable data sources.
>
> [March 24th Kinsey Report, p. 10, emphasis added]

We agree with Dr. Kinsey that the best available data should be used for each component of the calculation. **Accordingly, we do not limit ourselves to data sources available when the Round 2 methodology was developed more than twenty years ago. In cases where superior data sources are now available to more accurately fulfill the intent of the Round 2 calculation, our methodology incorporates that data**. We believe this approach to be the most appropriate interpretation of the directives of Mt. Laurel IV with respect to the quantification of need.

It is also worth repeating that there is no single prior round methodology to follow, a point that is particularly true with respect to the municipal allocation factors. As explained in ESI's February 19th *Response to Comments* report:

> The ESI methodology uses four allocation factors to distribute Prospective Need to the municipalities, matching the approach taken to Prospective Need in the Round 1 methodology and the approach taken to re-allocated Present Need in the Round 2 methodology, but adjusting the approach taken in the Round 2 methodology to Prospective Need, which used three allocation factors. In addition, the allocation factors used by ESI and their calculation have changed somewhat from the Second Round to improve data sources or to correct for apparent errors in the formula for the factors….
>
> [ESI February 19th *Response to Comments* report p. 47]

With respect to the decision to use four allocation factors, the *Response to Comments* report explains that this approach, utilized in Round 1:

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[24] Page 2 of Dr. Kinsey's January 29 response report reads:

> The Econsult Report, rather than replicate the Prior Round methodology as directed by the Supreme Court, comes up with its own fair share methodology that deviates from the Prior Round methodology repeatedly, all in the service of lowering fair share numbers

> …is also consistent with the principles set forth in *AMG Realty* of incorporating checks and balances into the methodology. Indeed the use of multiple employment factors within the methodology is cited by Judge Serpentelli as an exemplar of this principle[25]…
>
> … the use of two "responsibility factors" related to employment in the municipal allocation formula evens the weighting with the two "capacity factors" (household income and developable land), as intended in the First Round. By contrast a method using only one responsibility factors weights capacity factors twice as heavily as responsibility…
>
> [ESI February 19th *Response to Comments* report, p. 49-50]

2.4.1 RESPONSIBILITY FACTORS

The "responsibility factors" in the municipal allocation formula have historically focused on employment, which is understood to drive the need for affordable housing. As described in Section 5.2 of ESI's *Need and Obligations* report, the Round 1 methodology measured employment directly through state data sources, but encountered problems with the accuracy of that data at the municipal level. Accordingly, in Round 2, non-residential ratable growth was used as a proxy measure for employment.

As discussed above with respect to the re-allocation of regional need, and as detailed at length in Section 4.6 and 5.2 of ESI's *Need and Obligation* report, this metric is highly problematic as a surrogate for employment. Accordingly, ESI substituted an up to date and appropriate data source for municipal employment that was not available at the time of the Round 2 calculation: data from the Local Employment Dynamics (LED) Partnership program of the U.S. Census, which combines state and federal administrative data from Census sources and surveys.[26] This data source, which offers a continuous time series since 2002, is used to determine municipal share for both the level and change in regional employment.

Art Bernard's March 24th report criticizes this methodological update, and asserts:

> The growth in non-residential valuations has been used as a surrogate for jobs. It is an accurate surrogate for each municipality.
>
> [Bernard March 24th report, p. 27, emphasis added]

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[25] Judge Sepentelli writes:

> With regard to internal checks and balances, two examples will suffice. The projection of population to determine prospective regional need averages two population models, one which is considered to be conservative and one liberal. The allocation factors contain numerous checks and balances….The two employment factors in in the prospective need formula tend to check each other because one reflects past trend and the other, future projections.
> [AMG Realty Co. v. Warren Tp, 207 N.J. Super. 388, p. 453-454]

[26] See Section 2.1 and 5.2 of ESI's *Need and Obligations* report and Section 3.3.1 of ESI's *Response to Comments* report for a full description of this data source and its appropriateness

Mr. Bernard offers no evidence to support this claim. As demonstrated in Section 2.3.3 of this report, it is straightforward to evaluate the relationship between non-residential valuation change and employment change at a minimum for larger geographies, where Bureau of Labor Statistics (BLS) data does not carry significant locational concerns. [27] A comparison of like time periods (1990 – 2015, matching the time period for which ratables growth is calculated in the Kinsey report) illustrates very clearly that at the regional level, non-residential valuations are not an accurate surrogate for employment (see Table 2.12).

TABLE 2.12 – CHANGE IN NON-RESIDENTIAL VALUATION VS. EMPLOYMENT BY REGION 1990 – 2015

Region	Non-Residential Valuation Change 1990-2015 ($B)	% of Statewide Change 1990 - 2015	Employment Change 1990-2015	% of Statewide Change 1990-2015
1	27.0	28.3%	4,787	1.5%
2	18.1	19.0%	(21,948)	(6.8%)
3	16.7	17.6%	116,254	36.2%
4	18.6	19.6%	140,119	43.6%
5	9.4	9.9%	75,562	23.5%
6	5.4	5.6%	6,563	2.0%
State	95.2	100%	321,337	100%

Regions 1 and 2, which are located in northern New Jersey and include large parts of the New York metropolitan area, collectively represent nearly 50% of the non-residential ratables growth over the period. Yet, collectively, these regions have experienced negative employment change over this time. It seems likely that the dynamics of the real estate market in the New York metro area, rather than the growth in employment, is the key driver of this valuation change in Regions 1 and 2. Accordingly, non-residential valuations are a demonstrably poor surrogate for factor they are attempting the measure, employment, at the regional level. While this data comparison is not at the municipal level, the regions are of course composed of their component municipalities. **The radical misalignment of employment and valuation growth at the regional level strongly suggests that this metric is an inaccurate surrogate at the municipal level as well.**

Accordingly, ESI's use of Census Bureau employment data represents a significant increase in the accuracy of this calculation. As explained in our February 19th *Response to Comments* report:

[27] As described in Section 2.3.3, this analysis relies on data from the BLS Quarterly Census of Employment and Wages (QCEW). This data is reported by BLS at the County level, and then aggregated to the region. Average annual employment is used for 1990, and Q3 employment for 2015. While the problems with covered employment as a metric at the local level have been identified historically as it relates to the fair share process, the BLS data is a well-regarded and frequently cited metric at larger geographies, such as the county level.

While covered employment serves as one of the inputs used by the U.S. Census Bureau in the LEHD analysis, it is balanced by numerous other state and federal data sources, notably including Census Bureau surveys. In this respect, it represents an excellent example of the type of balanced data source advocated by the *AMG Realty* opinion.

In our judgement, the deficiencies of non-residential ratables as a proxy for employment, which we have detailed at length, far outweigh the potential deficiencies of the LEHD direct employment data. We note that the responsibility metric envisioned by the Round 1 methodology to capture employment, and that the ratables metric emerged in Round 2 as a substitute for employment due to data concerns. The incorporation of a new, up to date and standardized federal data source that addresses these concerns is not "going backwards," but rather an obvious and appropriate update of the methodology, that uses "the best source available for the information needed" (AMG Realty vs. Warren Tp at 453).

[ESI February 19th *Response to Comments* report, p. 49}

2.4.2 CAPACITY FACTORS

Capacity factors include both aggregate income differences (which measures a municipality's fiscal capacity to absorb affordable housing need) and developable land (which measures a municipality's physical capacity to absorb growth and development in support of affordable housing).

Aggregate Income Differences

Section 5.3.1 of ESI's *Need and Obligations* report and Section 3.2.2 of ESI's February 19th *Response to Comments* report describe in detail the statistical corrections undertaken to the Round 2 calculation.[28] We maintain the necessity and validity of this adjustment, which has very minimal impacts on the allocation of need, consistent with our broader approach of correcting rather than perpetuating clear errors in the Prior Round methodology.

Developable Land

As explained in Section 5.3.2 of ESI's *Need and Obligations* report and Section 3.3.3 of ESI's February 19th *Response to Comments* report, ESI's calculation of developable land is based on parcel-based data from tax records (commonly referred to as Mod IV) rather than aerial imagery. This calculation has was updated as part of ESI's updated March 24th *Need and* Obligations report to address minor technical issues with the classification of certain parcels, but our basic methodological approach remains unchanged. We believe this methodology provides a far more accurate assessment of undeveloped acreage than the aerial imagery approach undertaken by Dr. Kinsey, for a number of reasons set forth in our *Response to Comments* report:

[28] Stated briefly, the Round 2 calculation compares median income to average income, and weights median income by the number of households, neither of which are statistically valid techniques. The ESI methodology uses mean and median incomes appropriately to ensure statistical validity.

> The ESI approach does not utilize this data set when identifying undeveloped land, but rather estimates land areas using parcel level data. There are several reasons we believe this approach is more accurate. First, the minimum mapping unit (MMU), or the smallest feature that can be reliably delineated on a map through the aerial methodology, is one acre. If a feature is smaller than one acre, it will not show up as a separate feature but rather as part of a larger feature. Moreover, it is difficult using aerial photography to distinguish between less-intensive land use types. Identifying potentially developable land by parcel rather than by aerial imagery addresses this issue by allowing the exclusion of non-developable parcels from the analysis.
>
> [ESI February 19th *Response to Comments* report, p. 52]

Art Bernard's March 24th response report takes the unusual tactic of criticizing ESI for precision in the execution of this calculation:

> The second round regulations did not opt for precision in estimating undeveloped land by municipality. It opted for relative accuracy by measuring the municipal fair share of undeveloped land when comparing the undeveloped land estimate for a municipality to the same estimate for the housing region.
>
> [Bernard March 24 report, p. 29]

We recognize, of course, that the developable land estimate is calculated as a share of the region, and we recognize the necessary imprecision in certain aspects of the fair share methodology. We fail to see why this argues in favor of opting for a less precise metric to measure developable land when a more precise one is available, and can be appropriately calculated on a uniform statewide basis. Our goal is the accurate quantification and allocation of the need, and we believe our methodology best accomplishes this aim.

2.5 SECONDARY SOURCES OF AFFORDABLE HOUSING SUPPLY

This section reviews projections of the market-based mechanisms of affordable housing supply change, demolitions, residential conversions and filtering, and the allocation of those sources to adjust affordable housing need.

2.5.1 DEMOLITIONS

As reviewed in Section 6.1 of ESI's *Need and* Obligations report and Section 3.4.1 of ESI's February 19th *Response to Comments* report, demolitions are a secondary source factor that reduces affordable housing supply, thereby increasing fair share need. ESI and Dr. Kinsey use the same data source to determine the total volume of demolitions (municipal level data reported by the New Jersey Department of Community Affairs), but the ESI methodology refines the approach used to estimate the proportion of demolitions impacting LMI households. Specifically, where the Round 2 approach employed by Dr. Kinsey assumes (without citing any specific evidence) that the share of demolitions impacting affordable housing supply is 1.2x the countywide proportion of LMI households, the ESI methodology

introduces data to estimate the occupancy status and housing deficiency status, in addition to the income status, of demolished units. This step is necessary because demolitions of vacant homes do not increase housing need, and demolitions projected to occur on deficient units occupied by LMI households address units already accounted for in the Present Need. It is worth noting that ESI's refined methodology produces a similar estimate of the magnitude of LMI demolitions to that employed by Dr. Kinsey.[29]

Art Bernard's March 24th response report argues that these refinements have misrepresented the impact of demolitions on affordable housing supply:

> Dr. Angelides diverges from the prior round methodology again, by deciding that demolitions only impact low and moderate-income households if the housing unit was occupied by a low and moderate-income household….Pursuant to the prior round methodologies, a <u>percentage of all demolitions</u> impact low and moderate-income households by limiting the supply of housing to the general public.
>
> [March 24 Bernard Report p. 30-31, emphasis added]

ESI has acknowledged that we have refined the methodology to more accurately estimate demolitions of units occupied by an LMI household. We fail to understand the conceptual distinction drawn by Mr. Bernard between that approach, and the one undertaken in Round 2, under which "a percentage of all demolitions" impact LMI households. What does this percentage represent? Dr. Kinsey, in describing this procedure in his March 24th submission, refers to it as "the LMI share of these demolitions" (58). Said another way, this is the share of these households estimated to be occupied by LMI households – the same standard estimated by ESI (through what we believe to be a more rigorous methodology). Further, the Special Master's October 30th *Preliminary Review and Assessment* report notes that the Prior Round methodology employed by Dr. Kinsey "assumed the displacement of a household, rather than a vacant unit" (29). In sum, we fail to see the conceptual difference in these standards.

2.5.2 RESIDENTIAL CONVERSIONS

As reviewed in Section 6.2 of ESI's *Need and Obligations* report and Section 3.4.2 of ESI's February 19th *Response to Comments* report, residential conversions impact affordable housing supply by creating or removing additional units from existing structures. As explained in ESI's *Need and Obligations* report:

> This impact may be positive or negative for a given geography, although it is typically positive, implying that conversions on net create additional supply, and therefore subtract from affordable housing need
>
> [ESI *Need and Obligations* report, p. 69]

[29] Dr. Kinsey's January 29th Response report stipulates that "on an annualized basis, Econsult calculates LMI occupied housing demolitions of about the same magnitude projected by the Kinsey-FSHC R3 Model July 2015…(47-48).

COAH echoed this understanding of the typical impact of residential conversions on housing supply in its description of this component in the Round 2 methodology:

> Conversion is the creation of dwelling units from already existing structures. Almost all conversion consists of additional dwelling units being created from other residential units, and very rarely from nonresidential units. This type, termed residential conversion, is a significant and recognized source of housing supply to low- and moderate income families.
>
> [COAH Round 2 Methodology, 26 N.J.R. 2349, emphasis added]

As explained in ESI's *Need and Obligations* report, this activity is not reported directly and therefore is estimated as a "residual" (the unexplained component of observed changes in the housing stock):

> Since direct data on this activity is unavailable, the methodology employed in Round 1 and Round 2 estimates residential conversions by taking the net change in regional housing stock over a prior period, accounting for construction and demolition activity, and estimating conversions to be responsible for the remaining unexplained change. This activity is then allocated to municipalities based on a proxy measure of multi-family housing, and an estimate of the proportion of these conversions impacting the LMI housing supply is applied.
>
> [ESI *Need and Obligations* report, p. 72]

The ESI report updates the approach from Round 2 by using certificates of occupancy (COs) rather than building permits as the indicator of construction activity. The reason for this update is explained in the ESI *Need and Obligation* report as follows:

> Certified units serve as a more reliable metric for completed residential construction activity than building permits, since the volume of building permits issued for construction commencement diverge from the volume of completed units in a given year for any of a number of reasons (projects completed in a subsequent year, projects never completed, etc.)
>
> [ESI *Need and Obligations r*eport, p. 72, Footnote 66]

ESI also utilizes certificates of occupancy, rather than building permits, for the estimating of currently occupied units for the municipal 20% allocation cap calculation. Dr. Kinsey's methodology, by contrast, utilizes building permits rather than COs as its metric for new construction activity for each of these calculations.

Section 2.7 of ESI's September 24th *Review and Analysis* report for NJLM criticized this choice by Dr. Kinsey with respect to the allocation cap, noting the consistent differential in magnitude between building permits and COs. In his October 12th response to that report, Dr. Kinsey wrote as follows:

> On balance, a more accurate approach may well be to add residential COs and subtracting (sic) building demolitions…as not all building permits result in completed units, as some authorized construction is never completed or even started, and that the pace of completed units lags behind the pace of building permits.

[Oct 12 Kinsey *Response to NJLM's Expert Reports*, p. 13]

Dr. Kinsey thus concedes in October 2015 that the use of COs as a measure of supply change due to construction activity is more accurate than the use of building permits, since "not all building permits result in a completed unit." Despite this, the March 2016 Kinsey methodology continues to use building permits, rather than COs, in its residual calculation of housing unit change for the calculation of conversions.

This choice has a significant difference on the estimate of residential conversions, because the higher building permit count "explains" more of the observed change in supply as a product of construction activity, thus leaving a smaller residual which is attributable (by definition in the calculation) to conversions. **This is problematic in the instances where the building permit does not ultimately result in completed unit, because no change in housing units occurs in the observed data, but construction activity is nonetheless "credited" with creating a unit, resulting in a lower residual estimate**.[30]

In fact, in Dr. Kinsey's updated March 24th calculation, the use of building permits as the metric of units created through construction activity rather than certificates of occupancy results in an estimate of *negative* net residential conversions in the Kinsey model. Dr. Kinsey estimates a loss of nearly 6,000 units statewide through conversions, resulting in a projection of negative LMI conversion activity across both the gap period and Prospective Need period, increasing affordable housing need.

Table 2.13 below illustrates the significant effect of utilizing building permits rather than certificates of occupancy for the conversions calculation over the 2010 – 2014 time period. ESI's conversions calculation estimates residual housing change over the 2000 – 2010 Census period[31] and thus does not utilize this 2010 – 2014 period directly in our methodology, while Dr. Kinsey's calculation is based on the 2000 – 2014 period.[32] According to ESI's calculations, utilizing building permits during this period for

[30] To use an illustrative example, imagine a municipality starting with 100 housing units in which 5 demolitions and 1 conversion take place over a Census period, and 10 building permits are issued which ultimately result in 8 completed units. After this activity, the actual housing unit count in the following Census would be 104 (100 units – 5 demolitions + 1 conversion + 8 constructed units), yielding an observed change of 4 units. Dr. Kinsey's conversions methodology would start with those 4 units of observed supply change, add the 5 demolitions and subtract 10 building permits, yielding an estimate of *negative* 1 conversion, rather than *positive* 1, as would be yielded by the subtraction of 8 COs reflecting completed activity (rather than 10 building permits).

Note that these ratios are not far-fetched – footnote 20 on page 13 of Dr. Kinsey's October 12th *Response to League Expert Reports* notes that "During 1995-2014, the ratio of residential certificates of occupancy to building permits has been 83.5%, according to DCA data, tabulated by David N. Kinsey."

[31] We note that Dr. Kinsey's January 29th Response Report stipulated on this point: "I agree Econsult's decision to use decennial Census data is reasonable" (45)

[32] Data is appropriately adjusted to reflect the dates of housing unit estimates in the 2010 Census (April 1, 2010) and 2014 Census data (July 1, 2014) by taking 75% of reported demolitions, permits and COs for 2010 and 50% for 2014.

It is also worth noting that unlike Dr. Kinsey's model, the calculation in Table 2.13 does not make an adjustment for demolition and construction activity impacted by Hurricane Sandy. We recognize the appropriateness of adjusting for Sandy in generating demolitions projections, since inclusion of that time period in the base data for projections would in effect be projecting another similar event to occur over the Prospective Need period. However, the residual calculation, which starts from observed housing unit change over a given period,

the calculation results in an estimate of nearly 10,000 negative conversions, while using building permits results in a calculation of nearly 9,000 positive conversions (see Table 2.13).

TABLE 2.13 – RESIDENTIAL CONVERSION CALCULATION 2010 – 2014 USING BUILDING PERMITS VS. COS

Region	Housing Unit Change 2010-2014	Demolitions 2010 - 2014	Implied Units Added 2010-2014 (Unit Chg + Demos)	Building Permits 2010 - 2014	Conversions Estimate 2010 – 2014 using Permits	CO's 2010-2014	Conversions Estimate 2010 – 2014 using COs
1	11,689	3,069	14,758	19,243	(4,485)	11,160	3,598
2	5,627	2,688	8,315	9,905	(1,590)	6,976	1,339
3	7,782	1,089	8,871	10,176	(1,305)	7,481	1,390
4	4,743	8,221	12,964	15,890	(2,926)	11,832	1,132
5	6,183	1,446	7,629	6,688	941	6,367	1,262
6	2,002	2,829	4,831	5,312	(481)	4,718	114
State	38,026	19,342	57,368	67,214	**(9,847)**	48,533	**8,834**

Thus, if building permits are understood to be an accurate measure of completed units from construction activity, residential conversions would be understood to be a significant net reducer of housing supply (as in the Kinsey model), while if COs are understood to be an accurate measure of completed units from construction activity, residential conversions would be understood to be a significant net generator of affordable housing supply (as in the ESI model).

COAH clearly understood conversions to be a net generator of housing supply. As previously referenced, COAH's explanation of the inclusion of this factor within the Round 2 methodology is as follows:

> Conversion is the creation of dwelling units from already existing structures. Almost all conversion consists of additional dwelling units being created from other residential units, and very rarely from nonresidential units. This type, termed residential conversion, is a significant and recognized source of housing supply to low- and moderate income families.
>
> [COAH Round 2 Methodology, 26 N.J.R. 2349, emphasis added]

Dr. Kinsey's calculation of negative conversions is thus at odds with COAH's characterization of conversions as "significant and recognized source of housing supply." Further, his use of building permits rather than COs in the calculation, which as illustrated above is the driving force for this

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cannot be executed properly if inputs are "adjusted" away from actual activity. Said another way, the housing units reported in the Census data are inclusive of the conditions caused by the Hurricane Sandy – if the additional demolitions and construction activity related to the storm are adjusted out of the data, the residual calculation no longer correctly reflects the portion observed change in housing units that is unexplained by known factors (construction and demolitions). This Sandy adjustment is not an issue in ESI's methodology, which estimates conversions over the decennial Census period from 2000 to 2010.

result, is at odds with this own admission in his October 12th response report that "not all building permits result in completed units."

Dr. Kinsey justifies the use of building permits rather than COs in footnote 140 of his March 24th report, which reads as follows:

> Alternatively, Certificates of Occupancy could be used as a measure of completed housing units instead of building permits, but this would be a deviation from the Prior Round methodology which used building permits and not COs. In addition, discussions with DCA staff responsible for the State's construction reporting system, John Lago of the DCA Division of Codes and Standards, reveal a "leakage" problem in the reporting of COs compared with building permits; email from John Lago, DCA, to David N. Kinsey, March 23, 2015.
>
> [Kinsey March 24th Report, p. 75]

Interestingly, Dr. Kinsey's October 12th response report also addresses the question of the appropriateness of building permits vs. COs (in this case for the calculation of the municipal allocation cap) and characterized the same correspondence with DCA slightly differently:

> While we originally used certificate of occupancy and demolitions data for this purpose, the FSHC R3 model released in April 2015 used building permit and demolition data collected and reported by New Jersey Department of Community Affairs for this purpose, as I was advised by DCA staff that there were underreporting problems with CO data from some cities and that building permit data should be considered, too. (citation to – Email from John Lago, Division of Codes and Standard, DCA to David N. Kinsey, March 23, 2015)
>
> [Oct 12 Kinsey *Response to NJLM's Expert Reports*, p. 13, emphasis added]

Here, Dr. Kinsey reports that he was advised by DCA staff that "building permit data should be considered, too," presumably in conjunction with CO data. Yet Dr. Kinsey's methodology does not consider it in conjunction – it *replaces* the CO data which Dr. Kinsey reports was used in a previous iteration of his model entirely with building permit data.

Dr. Kinsey's makes this choice in spite of the fact that he acknowledges that "not all building permits result in completed units," and in spite of the fact that the result of the calculation in his March 2016 calculation, which shows negative conversions statewide over the gap period and Prospective Need periods, is at odds with COAH's understanding of conversions as a "significant and recognized source of housing supply."

ESI maintains that our methodology, which echoes Dr. Kinsey's approach in most respects but substitutes the more accurate COs for building permits as the metric of construction activity resulting in new housing units, appropriately calculates conversions for the purpose of the fair share calculation.[33]

[33] It should also be noted that Dr. Kinsey's calculation includes a coding error in its reporting of building permits for Region 4. Permit data from 2000 – 2014 for Princeton Borough and Princeton Township are combined to yield a summary total for Princeton over the time period (as the two entities have merged). However, Dr. Kinsey's total building permits calculation for Region 4 includes not only this combined

2.5.3 FILTERING

Filtering is the primary source of affordable housing in functioning markets. Filtering is widely accepted in the academic literature, and, as is demonstrated below, should be expected to be large in magnitude.[34] Over time, filtering has supplied the majority of housing affordable to LMI households. Thus, there is a strong reason to expect significant filtering in New Jersey, adding to the supply of housing affordable to LMI households. Contrary to theory, data and expectations, the new Kinsey/FSHC filtering model shows that filtering decreases the affordable housing supply without providing any underlying theory of why their result is reliable. In contract, the ESI model provides an estimate of filtering in line with experience, data, and theory.

Within the context of Fair Share process, filtering is one of three "secondary sources of affordable housing supply," which are used to adjust municipal affordable housing obligations (along with demolitions and conversions). In general, housing units age and depreciate, so that they become affordable to moderate and then low income households, which is typically referred to as "filtering" because that is the predominant direction, but for precision is referred to hereafter as "downward filtering." Sometimes quality-adjusted housing costs appreciate faster than incomes, and a unit becomes less affordable, which is referred to here as "upward filtering." Filtering is calculated on a "net" basis, i.e. the net difference between downward filtering and upward filtering. Increases in affordable housing supply (in this instance, from net downward filtering) reduce fair share obligations, while decreases in affordable housing supply (in this case, from net upward filtering) increase obligations.

Note also that "filtering" (ie – "downward filtering") in the context of the fair share environment is the process of a unit that is unaffordable to a LMI household becoming affordable to a LMI household. This definition is a narrow slice of the broader filtering process, which in general includes the depreciation of housing, the reduction in cost of housing, and the eventual demolition of the unit. The demolition of the unit is specifically accounted for elsewhere in the fair share methodology, and therefore is not part of the filtering calculation here.

This remainder of this section discusses:

- The history of the filtering calculation in Mt. Laurel IV;
- A general overview of filtering as a source of housing affordable to LMI families – Downward filtering exists under normal market conditions;
- How COAH has historically treated filtering – The Fair Share process has always included filtering and has always recognized that on the whole filtering increases the supply of affordable housing;

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total, but also the totals for the Borough and Township, meaning that these (1,101) permits are double counted. Deducting these doubnle counted permits would increase the conversion activity by a corresponding amount in Dr. Kinsey's calculation for Region 4.

[34] See Stuart S. Rosenthal, *Old homes, externalities, and poor neighborhoods A model of urban decline and renewal*, Journal of Urban Economics 63 (2008)

- The FSHC/Kinsey filtering model – Dr. Kinsey has submitted his first filtering model showing, against expectations and theory, significant upward filtering. This model has several conceptual and implementation flaws as well as calculation errors; and

- ESI's model which appropriately calculates filtering.

History of the Filtering Calculation in Mt. Laurel IV

Dr. Kinsey's July 2015 model and January 2016 gap submissions relied on an extrapolation of Econsult Corporation's 2008 filtering calculation for COAH, which showed net downward filtering of approximately 2,500 units a year statewide (reducing affordable housing obligations). ESI revised and updated that calculation as part of our December 2015 Need and Obligations report, estimating net downward filtering of a similar magnitude (approximately 3,000 units a year from 2015 – 2025, or 30,000 total units statewide).

ESI's updated March 2016 Need and Obligations report and Gap Period Calculation includes an updated filtering calculation. Filtering estimates have been revised to reflect observations submitted by FSHC, NJBA and their respective experts on the December model. The revised calculation estimates net downward filtering of approximately 41,000 units over the Prospective Need period (2015 – 2025), and approximately 32,000 units over the Gap Period (1999 – 2015).

The March 2016 FSHC/Kinsey submission includes, for the first time, a model produced by Dr. Kinsey to estimate past and future filtering of affordable housing. Dr. Kinsey's March 2016 model estimates that each housing region has seen net upward filtering (increasing the affordable housing obligation) over the Gap Period, and each region is projected to see net upward filtering over the Prospective Need period. Net upward filtering statewide in Dr. Kinsey's latest calculation totals 37,000 units over the Prospective Need period (2015 – 2025), and approximately 48,000 units over the Gap Period (1999 – 2015).

Table 2.14 below shows the net impact of the differential between ESI's estimates of net downward filtering (shown as positive values and increasing affordable housing supply, thereby reducing obligations) and the Kinsey/FSHC estimates of net upward filtering (shown as negative numbers and reducing affordable housing supply, thereby increasing obligations) over the Gap Period and Prospective Need period. Over the Gap Period (1999 – 2015), the net difference between the ESI and FSHC/Kinsey calculations is approximately 80,000 units. Over the Prospective Need period (2015 – 2025), the net difference is approximately 78,000 units. In sum, the net difference between the ESI and FSHC/Kinsey filtering calculations over the two periods is approximately 158,000 units of affordable housing supply, and therefore obligations.

TABLE 2.14 - IMPACT OF NET FILTERING ON AFFORDABLE HOUSING NEED, ESI AND KINSEY/FSHC MODELS, MARCH 2016

(Positive Values = Increasing Affordable Housing Supply (i.e. net downward filtering)
Negative values = Decreasing Affordable Housing Supply (i.e. upward filtering))

Region	ESI Model (1999-2015)	ESI Model (2015 – 2025)	Kinsey Model (1999 – 2015)	Kinsey Model (2015 – 2025)	Net Difference (1999 – 2015)	Net Difference (2015 – 2025)	Net Difference (1999 – 2025)
1	8,656	3,489	(15,123)	(10,508)	23,779	13,997	37,776
2	30,030	20,662	(5,021)	(3,387)	35,051	24,049	59,100
3	(16,025)	(1,827)	(9,125)	(7,738)	(6,900)	5,911	(989)
4	6,982	8,091	(3,728)	(2,613)	10,710	10,704	21,414
5	(4,897)	3,325	(9,981)	(8,808)	5,084	12,133	17,217
6	7,106	7,076	(5,096)	(4,149)	12,202	11,225	23,427
TOTAL	**31,852**	**40,816**	**(48,075)**	**(37,203)**	**79,927**	**78,017**	**157,945**

This enormous difference and its importance to the overall fair share numbers impel a deeper discussion of filtering. Accordingly, the rest of this section discusses why there is downward filtering under normal market conditions, how COAH has approached filtering in the past, how the Kinsey/FSHC filtering model is flawed and gives results starkly inconsistent with theory and expectations, and how ESI's filtering approach produces reasonable results.

General Overview of Filtering as a Source of Housing Affordable to LMI Families

First, it is important to recognize that downward filtering exists under normal market conditions. As we said in our March 24, 2016 report, "most of the housing affordable to LMI households in New Jersey was originally market rate housing that has become part of the affordable housing supply over time through downward filtering, and not housing specifically built for the affordable market." Indeed, even though the fair share process refers to filtering as a secondary source, it is really the primary source of housing available to LMI households.

Downward filtering occurs because housing ages, the design and style of the house falls out of fashion, and because neighborhoods fall out of favor. As housing units age, deteriorate, and become outdated, they move down the "quality ladder." Higher income households often move into high-quality new construction located in newer, more popular neighborhoods rather than rehabilitate their current unit. The departure of these households frees up existing units up for medium, moderate, and then low income households.[35]

[35] It is worth noting that there are exceptions to this simple model of filtering. For example, high income households might be incentivized to restore and maintain very amenity-rich, high-end units, as these units are less likely to effectively filter to lower income populations until housing supply increases sufficiently to absorb this increase in value. Source: O'Sullivan, A. (2009). Urban economics (7th ed.).

Upward filtering occurs because a location has become more valuable, and is sometimes referred to as "gentrification." Across the overall housing market, downward filtering is more common than upward filtering.[36]

Most housing units go through a general process of construction, filtering, and demolition.[37] If one thinks of the unit's lifespan in terms of a conveyor belt, the unit starts at the beginning of the belt and slowly moves to the end, where it falls off and is demolished. The pace of the conveyer belt and hence downward filtering can be affected by factors affecting the demand and supply of housing overall and in local markets. The general notion of filtering involves the entire trip down the conveyor belt, and a sequence of progressively lower income sets of households occupying the unit. At some point along the conveyor belt, the unit passes a point from being unaffordable to a LMI household to being affordable to a LMI household, whereupon, the unit has "filtered" downward in the *fair share sense*. It is this type of filtering that is relevant for the fair share process.

Filtering occurs when new market rate housing is being constructed faster than the number of non-LMI households is increasing. The newly constructed housing in excess of Non-LMI household growth frees up existing units for occupancy by other households. New market rate housing is higher value on average than existing housing for several reasons – It is in good condition, it is configured according to current preferences, and it is in a location that is attractive to those that can afford newly constructed houses. New house construction increases overall housing supply, which will make prices on existing houses lower than they otherwise would have been, resulting in some existing units becoming affordable to LMI households. Indeed, every new market rate unit in excess of non-LMI household growth means an existing unit ultimately becomes affordable, as once all the non-LMI households have housing, the owners of other housing units will have to lower their prices until an LMI household can afford it, or the unit will go vacant.

Historically, in the 1999-2014 period, we observed significantly more new housing stock than household growth, as illustrated in Table 2.15. More than 317,000 units were built in this period, and most of the units were likely higher quality houses, and therefore unlikely to be affordable to LMI households. There were approximately 201,000 new households in this period, and thus more than 116,000 units were built for existing NJ households, implying that there should be a significant amount of filtering over time – on the order of 100,000 units or more.

[36] See, e.g. Stuart S. Rosenthal, *Old homes, externalities, and poor neighborhoods A model of urban decline and renewal*, Journal of Urban Economics 63 (2008), p. 823. According to Bier in *Moving Up, Filtering Down: Metropolitan Housing Dynamics and Public Policy* (2001), annual housing construction typically exceeds household growth. As discussed later in this section, downward filtering will occur when new housing construction outstrips household growth (page 7).

[37] The process of filtering can be delayed through reinvestment in a property.

TABLE 2.15 - 1999-2014 NEW JERSEY HOUSING MARKET FACTS

Category	Units
New housing stock (COs)	317,691
New households	201,122
Surplus of new housing construction	**116,569**
New housing stock (COs)	317,691
Demolitions	(78,568)
Increase in housing stock	239,123
Increase in housing stock	239,123
New households	201,122
Conversions to non-residential or vacant units	38,001

Note that the number of demolitions does not decrease the amount of filtering. A quick review of the lifecycle of a housing unit will help illustrate this point. A newly constructed unit is usually relatively expensive and therefore affordable to a subset of the population, generally those of median income or greater. As the unit ages, it loses value and at some point filters down in value so that it is affordable to a LMI household. The unit continues to age and at some point is demolished. The unit is added to the affordable housing supply when it filters down, and is subtracted from the supply when it is demolished, is repurposed into a nonresidential use, or goes permanently vacant, if that occurs before demolition. The supply changes by the difference between net downward filtering and demolitions (and conversions).

Some additional historic context is helpful. There are more than three million housing units in New Jersey, and many of them are affordable to LMI households. However, when built, very few of these properties were actually affordable to LMI households. Accordingly, most properties currently affordable to LMI households became affordable because they filtered. For example, if there are 1,000,000 affordable units, and 100,000 were built as affordable units, then 900,000 units must have filtered. Almost all the housing stock is less than 150 years old, so that means that on average, about 60,000 units filtered down each decade. But this estimate greatly understates the overall amount of downward filtering because many of the units that filtered in the past have since been demolished.

Thus, downward filtering is the normal state of affairs in housing markets, both according to theory, as discussed above, and empirical data. In fact, according to a recent article in the American Economic Review, "…filtering has long been considered the primary mechanism by which markets supply low-income housing….."[38] Indeed, the paper estimates that "…the nation's housing stock filters down at a rate of roughly 1.9 percent per year in real terms." New Jersey's housing stock is approximately 3.2

[38] *Are Private Markets and Filtering a Viable Source of Low-Income Housing? Estimates from a "Repeat Income" Model* (Rosenthal 2014)

million units, which implies filtering of approximately 60,000 units per year, or 600,000 over the Prospective Need period. Thus, even if New Jersey's filtering rate is significantly lower than the national average, there should be a large amount of filtering in New Jersey. The article concludes that "These estimates confirm that filtering is a viable long-run market-based source of lower-income housing."

To summarize, filtering is a well-accepted activity in the housing market, has been significant historically in New Jersey.

How COAH has historically treated filtering

The fair share process has historically recognized filtering as a source of housing affordable to LMI households. The first and second rounds included net downward filtering of 51,889 and 20,185, each over a six year period, averaging more than 6,000 units per year. This illustrates that COAH and the courts have accepted this level of downward filtering.[39] The average filtering rate calculated in prior rounds is considerably higher than ESI's 2015-2025 filtering projection.

Filtering estimates in the Round 1 and Round 2 methodology were based on longitudinal data from the American Housing Survey. Specific units were tracked across a given time period, and the net difference between housing units filtering down and filtering up from the affordable housing categories were measured, annualized, and used to estimate future filtering effects. A similar methodology was included in the 2004 Round 3 methodology, and was rejected by the Appellate Court in 2007.

Importantly, that decision with respect to filtering was limited to the methodology employed by COAH for the 2004 estimates:

> We do not invalidate the use of filtering as a secondary source…if the data and methodology have a rational basis, then COAH remains free to incorporate filtering and other secondary sources in to the overall calculation of statewide housing need.

The Court's ruling, issued at the tail end of the largest housing bubble in modern times, specifically recognized filtering as a source of affordable housing supply. However, it noted that COAH did not demonstrate that filtering was occurring, and so disqualified the calculation in this instance.

> We conclude that the COAH premise, that housing is filtering down to low- and moderate-income households, lacks support in the record.

After the Appellate Court ruled, the housing bubble burst, and prices fell significantly.

The second attempt at third round rules used a different filtering approach, as discussed previously. That approach also predicted significant downward filtering.

[39] Or at least conditions that do not include the largest real estate bubble in modern times.

Analysis of FSHC/Kinsey Filtering Model and Art Bernard's Filtering Comments

The Kinsey/FSHC filtering model suffers from conceptual and technical problems, and delivers results that are inconsistent with theory and facts. We begin with a discussion of the major conceptual errors, and then describe some of the technical errors we have observed.

Conceptual Errors

The model incorrectly requires a filtered house to be occupied by a LMI household.

The Kinsey/FSHC's major methodological change is to assert that only units that 1) have filtered down (ie have become affordable to LMI households) AND 2) are actually occupied by a LMI household count as a secondary source of affordable housing supply. The addition of the second criteria is conceptually incorrect. The fact that a unit is not occupied by a LMI household does not mean that the unit is not available to a LMI household. It is. A LMI household could afford a filtered house because, by definition, that is what it means for the unit to have filtered. In other words, a non-LMI household did not bid up the price so that a LMI household could not afford it anymore. Rather, the LMI households that could have occupied the unit instead chose to do something else. For example, a LMI household can rationally choose to pay more for housing than they can "afford" according to the 28% of income definition of affordability. There are many reasons why a LMI household would choose to spend more on housing than it "should", such as savings on transportation costs or time, proximity to family, preference for housing type, and so on. The fact that a LMI house did not purchase a filtered house (or occupy a filtered unit) does not mean that unit doesn't count. It means that the LMI household chose to do something else.

The model inappropriately introduces the idea of household size to supply calculations

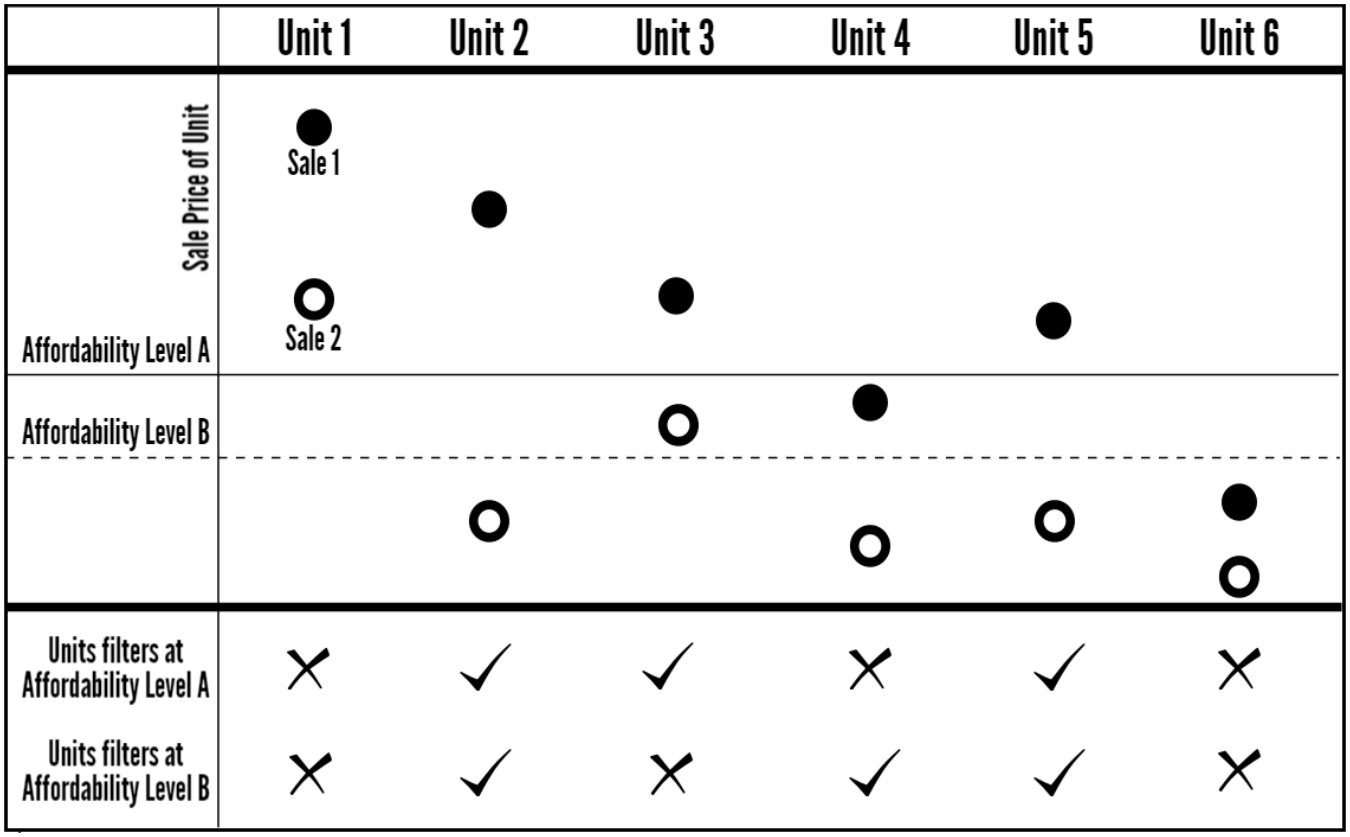
Dr. Kinsey inappropriately introduces the idea of household size dependent metrics for affordability. Specifically, Dr. Kinsey uses affordability limits based on household size. There are three reasons why this introduction is problematic.

First, this new notion, which is not used anywhere else with respect to affordable housing supply, introduces the untenable result that the same housing stock can have conflicting counts of affordable units depending upon who is living in the community. For illustration, using Dr. Kinsey's definition of affordability, consider a community with ten households. All are four person households, and five are LMI households living in housing affordable to a four person LMI household, thus the community has five "affordable units". Suppose three of the five LMI households were replaced with three person LMI households, with a lower affordability threshold which they cannot meet. In this situation, using Dr. Kinsey's definition, the same housing stock would have three "affordable units" and not five, but nothing has changed.

Second, one year PUMS data is insufficient to reliably disaggregate household size specific information on a county basis, let alone the municipal basis that has been required by the courts for any filtering analysis.

Third, the issue for this analysis is not the number of households above the affordability threshold, but the number of housing units that move above or below the affordability threshold. Changing the affordability threshold does not necessarily change the magnitude of filtering, nor is it known if the magnitude would increase or decrease. This is illustrated in the Figure 2.3 below. At affordability level A units 2, 3, and 5 filter down, for a total of three units filtering down. At affordability level B, units 2, 4, and 5 filter down, again for a total of three units filtering down. These are not the same sets of units, but the magnitude of filtering remains unchanged.

FIGURE 2.3 – ILLUSTRATIVE EXAMPLE OF FILTERING UNDER HOUSEHOLD SIZE AFFORDABILITY DEFINITIONS



These three points illustrate that Dr. Kinsey's conceptual framework introduces inappropriate and unnecessary complication in the calculation of filtering.

Disregarding Filtering Is Wrong

Though the Kinsey/FSHC report accepts filtering as a secondary source of affordable housing supply, Mr. Bernard is not so sure. Mr. Bernard has argued that because filtering is complicated and the ESI and Kinsey/FSHC models give different results, the court should disregard filtering. Dr. Kinsey's aberrant results aside, the empirical literature on filtering, the prior COAH filtering estimates, estimates

from Econsult Corporation in 2008, and ESI estimates in 2015 and 2016 of filtering all provide relatively consistent estimates of filtering.

Disregarding filtering is exactly equivalent to assuming filtering is zero, and as history has shown, we should expect downward filtering overall. Zero filtering is clearly not the best estimate of filtering. For nearly a year, Dr. Kinsey has included downward filtering, until his March 2016 report, in which he estimates (incorrectly, in our view) upward filtering. Disregarding filtering is not correct from a methodological point of view. The only real question is what is the best estimate of filtering, and zero is not that estimate.

Technical Errors

There are numerous technical mistakes in Dr. Kinsey's analysis. We review several of these mistakes below, and expect that there are additional errors

Dr. Kinsey's Methodology contains numerous technical errors

Dr. Kinsey uses PUMS data to estimate the percent of affordable housing units that are occupied by LMI households, and applies those percentages to the dataset of house sales. This method is problematic for several reasons:

- Housing transaction data is a much more robust dataset than the PUMS for an analysis of the housing market;
- PUMS data cannot be used at the municipal level;
- The one year PUMS has an insufficient sample size to reliably estimate the data necessary for an analysis of filtering by household size and tenure;
- Household characteristics in the PUMS data do not necessarily reflect characteristics of households currently active in the housing market;
- Dr. Kinsey's linear application of LMI occupancy, derived from PUMS, is inappropriately applied to scale the number of units filtering, as reflected in the repeat-sales dataset;
- Dr. Kinsey is using the wrong universe of housing transactions to estimate filtering. His use of Census data ignores repeat sales, and changing sales patterns over time.[40]

[40] Page 66 of Dr. Kinsey's March 2016 report states:

> Thus, to extrapolate out filtering for all sales transactions, we create proportions by municipality of filtered units to overall paired transactions and then apply that proportion to ACS data on the number of occupied housing units in which the householder has moved since 2000.

Dr. Kinsey incorrectly runs the multinomial logit model

Though he ultimately does not rely on the logit model, Dr. Kinsey uses the results of the logit model to set expectations about the reasonableness of his prospective need filtering estimate. The multinomial logit model uses expectations of future growth, along with other variables, such as municipal characteristics, to predict upward and downward filtering. Dr. Kinsey, ignoring the Appellate Court's guidance to use a model that recognizes the housing cycle, assumes that the housing cycle is always in growth mode. It should be no surprise that if the model is set to assume extremely high housing price growth in every year, there will be little downward filtering.

The model assumes that the prospective need period would have the same housing cycle as the gap period.

Though Dr. Kinsey initially forecasts owner-occupied filtering for the prospective need period using the statistical model based on ESI's December 2015 report, he ultimately uses a scaled version of his 1999-2015 filtering estimates. "Multiplying the 1999-2015 estimated totals by 10/16, we estimate a net loss of 14,309 affordable units from 2015-2025" (68). Therefore the model assumes that the housing cycle in the prospective need period will mirror the housing cycle in the gap period. This is an interesting assumption for Dr. Kinsey, as he had previously criticized what he thought was ESI's application of gap period housing cycle data to the prospective need period:

> First, the forecasting for the period 2015 to 2025 is based on a highly anomalous period: 2000 to 2014…. Econsult assumes that the precipitous decline in home prices since 2008, an event that had not been seen since the Great Depression, will happen again in the next ten years, and that the low home prices experienced over the last few years will get even lower
>
> [January 29 Kinsey Response Report. p. 36]

The quote from Kinsey's report is factually incorrect. ESI's framework in the December 2015 model explicitly accounts for the housing cycle, and incorporates a prediction of future growth. Instead of following this method, Dr. Kinsey is directly assuming that the direction and magnitude of the real estate cycle that occurred from 2000 to 2014 will occur again in the ten year period from 2015 to 2025.

The model incorrectly reduces filtering because of deteriorated units

Dr. Kinsey uses PUMS to measure, at a county level, the percent of units that are deteriorated (lacking adequate kitchen or bath facilities). He then reduces the pool of filtered units by the proportion of deteriorated units. This method implicitly assumes that the percent of units that filter is the same as the percent of all units that are deteriorated, but he provides no support for this assumption. Indeed, intuition and logic imply that very few if any units that filter are deteriorated. Units filter because they are aging and depreciating relative to the housing stock, but the point at which they transition from unaffordable to affordable, they are still in relatively sound condition. Units continue to depreciate after they filter, and they would depreciate enough to have inadequate kitchen or bath facilities significantly later than the point when they transition from unaffordable to affordable. Therefore, it seems much

more likely that none or few of the units that filter are deteriorated. Units that do deteriorate likely do so years later, and thus would be captured in the present need calculation.

Further, Dr. Kinsey calculates deterioration at a county level, and applies the same percentage to each municipality in that county. He therefore assumes that the percentage of deteriorated units in Princeton is the same as in Trenton. He again provides no basis for this counterintuitive result.

> To determine deterioration, again using 2000 Census data and 2005-2014 ACS 1-year data and interpolating for 2001-2004, we look at the same three factors used in this updated model's Present Need methodology: (1) whether the unit had complete kitchen facilities, (2) whether the unit had complete plumbing facilities, and (3) whether the unit was built prior to 1965 and had more than 1.01 persons to rooms.
>
> [Kinsey March 24th report, p. 65]

<u>The Kinsey/FSHC method of determining house affordability is flawed</u>

To calculate affordability, Dr. Kinsey establishes a definition of annual owner costs as including the following: mortgage payments, mortgage insurance, homeowners insurance, and property taxes. There are a number of issues and suspect assumptions affiliated with his calculation.

The most apparent issue with Dr. Kinsey's calculation is how far out of line it is from other estimates. The mean owner cost from PUMS (which Kinsey also uses in his analysis) has a mean annual value of $26,772 over all of New Jersey. Our owner cost calculation (using home sales data) has an average annual value of $25,801. Dr. Kinsey's calculation has an annual average of $32,491. His calculation is clearly over-estimated, and disagrees with the PUMS data, which he uses throughout his analysis.

Further, Dr. Kinsey calculates a property tax bill using sales price and an effective tax rate. The correct calculation of property taxes is to use the assessed value and tax rate.

<u>The model incorrectly assumes that apartment units can only filter if the occupants move.</u>

Dr. Kinsey bases his apartment filtering number on units that have experienced a move since 2000:

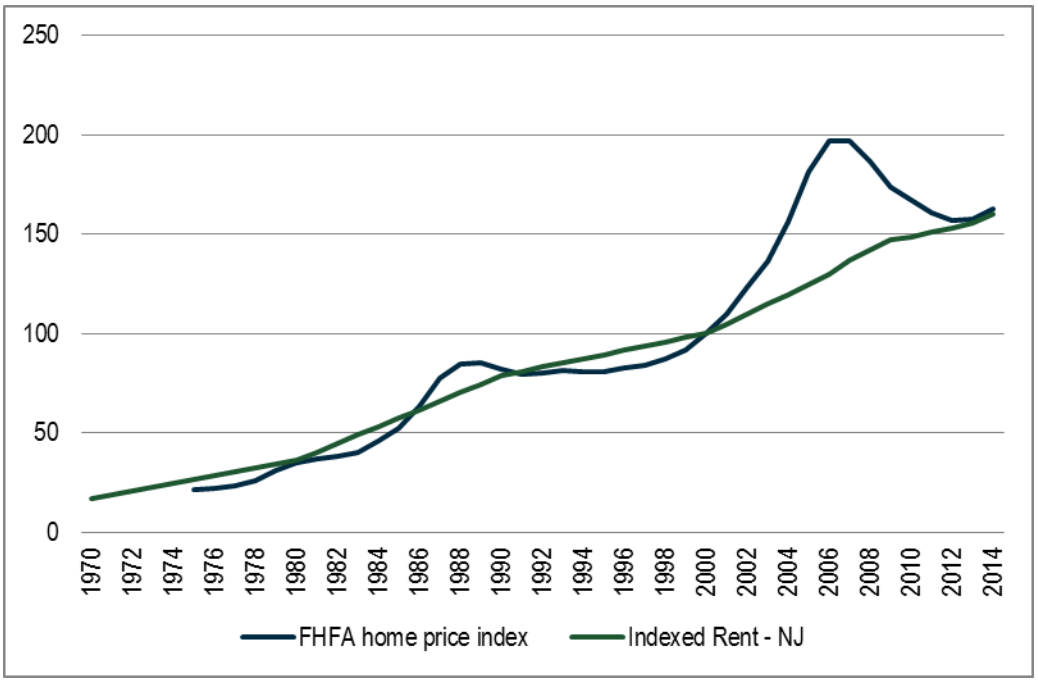
> We then allocate the total rental filtering in the county by each municipality's share of the county total of non-deteriorated rental units in which there has been a move since 2000, for net rental filtering by municipality.
>
> [Kinsey March 24th report, p. 74]

However, unlike owner occupied housing, a resident does not need to move for the unit to count as filtering. That difference arises because the price of a rental unit, and hence the affordability of the unit, changes every time the lease is renewed.

<u>The rent vs. home value graphic is misleading because it does not cover a sufficiently large time period</u>

We have reviewed the empirical relationship between median home values and median rental rates, as Dr. Kinsey and Mr. Otteau have done. While Dr. Kinsey and Mr. Otteau seem to show opposing movement in these two measures, their claim is entirely dependent on choosing a short and fundamentally arbitrary time period. Below we display the long run relationship between house prices and rents from 1975 through 2014, indexing both series to the same starting year. During the study period from 2000-2014, house prices and rents *on average* grew at the same rate. In recent years, inflation in housing prices caused by speculative activity in the real estate market leading up to the Great Recession caused home prices to inflate above rental rates. This is in opposition to Dr. Kinsey's inference, which seems to suggest that rental rates are less affordable than home prices. Looking at the two measures over a longer time period strongly shows that the two prices move together. Figure 2.4 below illustrates this fact:

FIGURE 2.4 - LONG-TERM RELATIONSHIP BETWEEN HOUSING PRICES AND RENTS



The graphics in Dr. Kinsey's report show home prices and rental rates from 2005 to 2014. This arbitrary period was the end of the "housing bubble" (as mentioned many times by both Dr. Kinsey and Mr. Otteau); home prices rose beyond sustainable levels until approximately 2007 and then fell precipitously, but are again on the rise. Rental rates, conversely, follow a smoother trajectory. This is consistent with theory and literature on real estate[41]; housing prices will fluctuate more than rental rates in the short term, but in the long term the two values will move together.

[41] Gallin (2008); Himmelberg, Mayer, and Sinai (2005)

Dr. Kinsey inappropriately excludes newer units that filter

Dr. Kinsey excludes a large amount of the rental market from the analysis through his arbitrary claim that a two year old unit cannot filter. Rental units are able to very quickly change price through rent negotiations. Dr. Kinsey's statement that newer units "would not be found in a repeat-sales-type model" is unfounded. The repeat sales data does include newer units. Depending on market conditions, any of those units can filter.

ESI's Model Appropriately Calculates Filtering

Our model produces reasonable estimates of filtering consistent with other estimates of filtering. Further, our estimates are conservative, as we assume a large amount of housing price growth. Our findings are at the low end of other estimates of filtering. In the context of New Jersey, with more than 3,000,000 housing units, ESI's predicted downward filtering of 40,000 units, or a little more than one percent of the housing stock over the course of a decade, is extremely conservative. Finally, we have incorporated suggestions for improvement in our latest results.

Summary

Filtering is a well-recognized source of affordable housing supply, and to assume it does not exist is inappropriate. History, theory and data imply there will be significant amounts of downward filtering looking forward. The Kinsey/FSHC model contains numerous methodological and conceptual flaws and produces results the opposite of what is reasonable to expect. It is therefore appropriate to disregard that model as unreliable. In contrast, the ESI model produces results in line with theory, history and data, and the methodology can be straightforwardly reproduced using available data. The ESI model is therefore appropriate for use in the Mt. Laurel IV proceedings.

2.5.4 SECONDARY SOURCES ALLOCATION

Section 6.4 of ESI's *Need and Obligations* report and Section 3.4.4 of ESI's February 19th *Response to Comments* report discuss in detail ESI's methodology for applying the net impact of the three categories of secondary source adjustments (demolitions, conversions and filtering) discussed in this section to the municipal Prospective Need and Present Need obligations. Our approach is reviewed briefly below, followed by a discussion of Dr. Kinsey's (flawed) application of secondary sources to Present Need in his March 24th model.

ESI's approach to the allocation of secondary sources, as described in the *Need and Obligations* report, is to "align aggregate municipal need with the increment between changes in the LMI housing need and affordable housing supply" (83). While this principle is straightforward and the alignment of need and obligations clearly represents the intent of the secondary sources calculation, it has proved problematic in Dr. Kinsey's methodology. This issue was raised in ESI's September 24th *Review and Analysis* report, and was summarized as follows in Special Master Richard Reading's October 30th *Preliminary Review and Assessment* report:

> **Secondary Source Adjustment** - The secondary sources of filtering, conversions and demolitions calculated by Dr. Kinsey indicate a 18,234 unit reduction in the statewide (1999-2025) Prospective Need rather than an increase of 7,047 households which he derived because the model allocates regional need to municipalities before the adjustment for secondary sources. The secondary source adjustments are municipally-derived and their assignment prior to the allocation of regional need creates a modeling problem that has not been addressed or presented. While the mathematical logic for an adjustment is recognized, this is a modeling issue that Dr. Kinsey should correct.
>
> [October 30 Reading *Preliminary Review and Assessment* report, p.32, emphasis in original]

This mismatch arises due to what ESI has described as the "zero bound problem":

> It is possible…for a municipality to have a secondary source adjustment that is larger than the sum of Present and Prospective Need for that municipality. A strict application of secondary sources to such a municipality would result in a *negative* allocation. In the Round 2 methodology, these units below the "zero bound" for a municipality are simply dropped from the methodology and left unaccounted for. From the perspective of the municipality at the zero bound, the distinction is immaterial, since its need is already zero. However, from the perspective of the region, failing to account for these units creates a mismatch between regional affordable housing need and regional affordable housing supply provided through market-based forces.
>
> [ESI *Need and Obligations* report, p. 82, emphasis added]

ESI's *Need and Obligations* report goes on to explain why this mismatch is problematic, and requires correction:

> This mismatch between anticipated affordable housing need and supply is problematic because need is calculated regionally, meaning that LMI household growth anticipated in one county (or in one municipality) spills over into another for the purpose of estimating housing need. Conceptually, the secondary source adjustments partially offset this need in recognition that a portion of the incremental LMI household population that has been estimated will be housed in units created by the market forces enumerated within the calculation. Logically, this is still true in cases where the municipality has no allocated need – an additional unit created in that municipality still provides housing for an LMI household, thereby reducing by one the housing need for the region. Within the confines of the Prior Round methodology, however, this adjustment is not made properly and regional need is thus improperly inflated.
>
> [ESI *Need and Obligations* report p. 82, emphasis added]

The ESI *Need and Obligations* model has corrected this modeling issue, successfully aligning the projected changes in housing supply from secondary sources with commensurate adjustments to affordable housing need. It does so by allocating additional units below the "zero bound" within the housing region in which they are adding to the affordable housing supply:

> To correct for this occurrence, additional downward adjustments to need for secondary supply that take place beneath the zero bound are summed for each region. These additional secondary source adjustments for each region are then allocated to municipalities in proportion to the share of total regional Present and Prospective Need that each municipality represents. This methodology aligns aggregate municipal need with the increment between changes in LMI housing need and affordable housing supply, as intended.
>
> [ESI *Need and Obligations* report, p. 83]

Section 3.4.4 of ESI's February 19th *Response to Comments* discusses and responds in detail Dr. Kinsey's critique of this procedure. As noted in that report, Dr. Kinsey argues against this procedure as follows:

> …a filtered unit in Newark should not reduce Milburn's need…it stands the Mount Laurel doctrine on its head to say that because housing is deteriorating in Camden there is less need for housing in Cherry Hill.
>
> [January 29 Kinsey Response, p. 47-48]

ESI's response to this assertion reads (in part):

> …the driver of Prospective Need, population growth, is calculated regionally. Therefore, to return to Dr. Kinsey's example, population growth in Newark clearly generates affordable housing need in Milburn, and everywhere else in Region 2, within the structure of the methodology. The function of secondary sources within the methodology to quantify the extent to which such need will be satisfied through private market mechanisms. The addition of housing supply in Newark plainly reduces regional need, because it generates affordable housing to satisfy the demand. This truism of supply and demand does not cease to exist because the fair share obligation of a particular municipality has already been reduced to zero.
>
> The Kinsey methodology suggests that urban centers generate housing need through population growth, but that anticipated growth in affordable housing supply in those centers does not reduce that need *at all* (for those urban aid municipalities with no Prospective Need allocation and for their regions). This proposition creates an unbalanced equation in which only demand but not supply is considered. The inclusion of secondary sources within the methodology plainly indicates that this is not the intent of the Prior Round methodology. Since the housing regions represent the framework for evaluating housing need, and are the geography at which demand growth is captured and allocated, ESI's regional allocation of additional secondary source adjustments is an appropriate mechanism to successfully align projected supply adjustments with adjustments to affordable housing need.
>
> [ESI February 19th *Response to Comments* report, p. 71, emphasis added]

ESI maintains that our allocation methodology is an appropriate mechanism to execute adjustments to fair share obligations in alignment with the calculated impact of secondary sources of supply on affordable housing need.

Application to Present Need

As noted in Section 2.1, the March 2016 Kinsey model and report appropriately acknowledge that secondary sources impact Present Need as well as Prospective Need obligations. This adjustment is in keeping with the Round 2 methodology and with ESI's *Need and Obligations* methodology, but was not undertaken in the original Kinsey methodology. However, Dr. Kinsey's implementation of this step within his March 24th model is problematic.

Dr. Kinsey's March 24th report explains that the application of secondary sources can either reduce or increase the Present Need municipalities:

> The Present Need…is reduced by any so-called "secondary sources" of affordable housing supply and demand, i.e., filtering, conversions, and demolitions, for the 2015- 2025 period — or in some cases increased if the secondary sources are positive, thus creating a greater need for affordable housing rather than contributing to the supply of affordable housing.
>
> [Kinsey March 24th Report, p. 18]

This is in keeping with the Round 2 methodology, as noted in footnote 39 of the March 24th Kinsey report:

> While this reduction of Present Need by secondary sources is not explicit in the Prior Round methodology, except for Qualified Urban Aid Municipalities, it is implicit in COAH's Second Round methodology: "In the reductions or increases to housing need due to secondary supply and demand, all municipalities, including Urban Aid municipalities, participate. This is true because all municipalities have some type of housing need, and reductions apply to housing need no matter how the need is generated." N.J.A.C. 5:93 Appendix A, 93-56, 26 N.J.R. 2348, June 6, 1994.
>
> [Kinsey March 24th Report, p. 18]

ESI cites this same passage in Section 6.4 of our Need and Obligations report, and reaches the same conclusion with respect to the appropriateness of adjusting Present Need for secondary sources once adjustments to the Prospective Need have been exhausted. However, while ESI's methodology in fact applies "reductions or increases" to Present Need, the Kinsey methodology in practice disproportionately applies increases to the need.

Tab "2e. Present Need 2015" in Dr. Kinsey's FSHC R3 Ocean County Model March 2016 workbook includes a column for "Present Need Initial Calculation 2015", a column for "Excess Secondary Sources Not Used in Prospective Need", and a Column for "Present Need after Secondary Sources, 2015" which sums the two previous columns to yield the adjusted Present Need for each municipality in Ocean County. Only one municipality in Ocean County (Lakewood Township) has a non-zero value in the "Excess Secondary Sources Not Used in Prospective Need" column, and accordingly only Lakewwod receives an adjustment to their Present Need obligation through this step. However, when Dr. Kinsey's method in this tab is applied uniformly statewide, **50 municipalities have an adjustment in the "Excess Secondary Sources" column. For 48 municipalities, this adjustment increases Present Need, while for 2 municipalities, it decreases Present Need.**

In large part, this asymmetry is due to the flaws in Dr. Kinsey's estimates of supply change due to secondary sources, which as detailed throughout this section almost uniformly produce estimates of decreasing affordable housing supply due to market based factors, contradicting COAH's historic understanding and estimates of the net effect of these factors. It is also in part due to problematic coding within his model. The formula in the "Excess Secondary Sources" column in Dr. Kinsey's workbook dictates that in instances where Prospective Need has been adjusted to zero[42] executes the following calculation:

[Net Downward Filtering] + [Net Conversions] – [Gross Prospective Need] – [Demolitions] =
[Excess Secondary Sources Not Used in Prospective Need]

It is helpful to consider data reported by Dr. Kinsey for a particular municipality to understand the flaw in this calculation:

- Quinton Township in Salem County has Gross Prospective Need (2015 – 2025, prior to secondary source adjustments) of 31 in Dr. Kinsey's model.
- Net downward filtering for Quinton Township is 56, net conversions are -2, and demolitions are 6, yielding a net increase in affordable housing supply of 48.
- Therefore, Quinton Township's "Adjusted Prospective Need" is reduced to 0 (since secondary source supply changes exceed gross need by 17 units).
- This leaves 17 excess units of supply, which are next applied to Present Need. However, Quinton Township begins with a Present Need of 0.
- ESI's methodology would apply these 17 excess units to reduce the regional need. Dr. Kinsey's methodology does not apply this step. Instead, it performs the following calculation, based on the formula described above:
- [Net Downward Filtering: 56] + [Net Conversions: -2] – [Gross Prospective Need: 31] – [Demolitions: 6] = [56 – 2 – 31 – 6] = [+17]

[42] Note that this applies on to non-urban aid municipalities – urban aid municipalities, which start with zero Prospective Need, are governed by a different formula in Dr. Kinsey's workbook.

It is worth noting that ESI also does not fully agree with the execution of this calculation, which keeps Prospective Need at zero for all urban aid municipalities in all instances, and applies adjustments to Present Need only. As previously cited, the Round 2 methodology reads: "In the reductions or increases to housing need due to secondary supply and demand, all municipalities, including Urban Aid municipalities, participate. This is true because all municipalities have some type of housing need, and reductions apply to housing need no matter how the need is generated "(26 N.J.R. 2348). ESI reads the phrase "reductions apply to housing need no matter how the need is generated" to allow for the addition of Prospective Need obligations to urban aid municipalities in instance where secondary sources reduce supply in those municipalities, adding to housing need. Dr. Kinsey's method instead keeps Prospective Need fixed at zero for these municipalities, and applies the entire adjustment to Present Need. This choice does not impact the aggregate need, but does impact its distribution between Present Need and Prospective Need.

Dr. Kinsey's methodology thus calculates an *increase* of 17 units of obligations rather than a decrease, and *adds* those units to the Present Need obligation for Quinton Township, which goes from 0 to 17, despite the fact that Quinton Township has a projected affordable housing supply change greater than their Prospective Need and Present Need allocation.

To review, Quinton Township is projected by Dr. Kinsey to have 17 additional units of supply beyond its Prospective Need and Present Need. Rather than allocate those units regionally to offset need, or even drop them from the calculation, Dr. Kinsey's methodology *adds* them to the Present Need. This represents a clear error in Dr. Kinsey's secondary source application methodology.

3.0 GAP PERIOD (1999-2015)

In accordance with the Court's February 18, 2016 opinion, ESI submitted on March 24, 2016 a gap period calculation based on the methodology proposed in Special Master Richard Reading's February 17, 2016 *Bridging the Gap* report and required by the Court.

That report makes clear that while we have submitted quantification at the behest of the Court, we do not consider it an appropriate basis for the assignment of obligations to municipalities. We maintain that the gap period does not represent any additive need within the fair share framework, as discussed in our December 30, 2015 and March 24, 2016 *Need and Obligations* reports, our December 8, 2015 *Response to the Ocean County Third Revised Case Management Order*, our February 8, 2016 *Analysis of the Gap Period* report. As illustrated in Section 3 of our March 24th *Gap Period Calculation* report, the gap calculation results in an estimate of the net increase in LMI households during the gap period that do not own their homes free and clear, live in adequate housing, and do not live in market-rate housing affordable to LMI households or deed-restricted affordable housing – in other words, cost-burdened households.

This chapter continues that analysis, drawing on the March 24th submissions of Kinsey/Bernard, to demonstrate basic agreement between the parties as to the result of the calculation, and clarifies our position on the status of these households with regard to fair share need. Importantly, contrary to accusations, **ESI does not maintain that these households that otherwise qualify as part of the need are excluded due to their cost-burden status. Instead, we maintain that households cannot be included in the need merely because they are cost-burdened, but must be first be otherwise qualified as a part of the Present Need or Prospective Need**. Dr. Kinsey's own definition of the categories of fair share need demonstrates that there are only Prospective Need and Present Need, and the households in question fit into neither category based on their basic definitions. Therefore, there is no basis from which to include them in the need – only the assertion that they would have been included has Prospective Need been calculated in 1999, and the unproven assertion that their cost burden status is the direct result of COAH's administrative failings.

3.1 ESI'S GAP PERIOD ANALYSIS

ESI has presented at length our analysis of fair share affordable housing need emerging from the gap period in several reports and submissions to date, including:

- ESI's December 8, 2015 expert submission to the Court in Ocean County (entitled *Econsult Solutions Inc. Response to Ocean County Third Revised Case Management Order).*
- Section 7 of ESI's methodology report (*entitled New Jersey Affordable Housing Need and Obligations)* released in December 2015 and updated in March 2016.
- ESI's February 8, 2016 expert submission to the Court in Ocean County (entitled *Econsult Solutions, Inc. Analysis of the Gap Period (1999-2015)).*

- ESI's March 24th expert submission to the Court in Ocean County (entitled *Econsult Solutions, Inc. Gap Period Calculation).*

These reports set forth a consistent analysis of the circumstances of LMI households emerging during the gap period, and our analysis remains unchanged. Briefly, those analysis are summarized as follows:

- The Fair Housing Act defines Prospective Need as a projection of affordable housing need attributable to likely development and growth over a ten year period. In other words, it is by definition forward-facing, and encompasses housing need that does not yet exist;

- Present Need represents all currently identifiable affordable housing need, and by design and by definition incorporates all prior population, household and housing characteristics;

- Present Need and Prospective Need together comprise all affordable housing need under the FHA framework;[43]

- Therefore, no legally assigned obligation nor identifiable current affordable housing need arises from the gap period;

- Attempts to calculate housing "need" from that time period based on the retrospective application of a Prospective Need methodology do not accurately describe housing need as of today, because they fail to account for the fundamental difference between LMI households emerging during the gap period and those LMI households included in the 2015 Present Need or 2015 – 2025 Prospective Need: gap period LMI households currently have sound housing, while the LMI households accounted for in Prospective Need and Present Need do not.

Notably, the Special Master's February 17th *Bridging the Gap* report is explicit that the gap period calculation adopted by the Court represents neither Present Need nor Prospective Need as set forth in the FHA. Further, the Special Master is clear that this calculation has no basis in the prior round methodologies. Accordingly, we maintain that the gap period yields no legal affordable housing obligations nor identifiable additive affordable housing need given the FHA framework and the instructions of Mount Laurel IV.

3.2 GAP PERIOD VS. PROSPECTIVE NEED

Dr. Kinsey writes in his March 24th submission that the following categories of affordable housing need are calculated under the Mount Laurel doctrine and Fair Housing Act:

[43] As discussed in Section 7.1 of ESI's *Need and Obligations* report, it instructive to consider the analogous situation faced by COAH in calculation Round 1 obligations in 1986-1987. At that time, the Constitutional obligation under the Mt. Laurel doctrine had existed for a number of years, but municipal obligations to satisfy that obligation had not been uniformly determined. COAH did not quantify "need" emerging from any particular period in past in Round 1. Instead, in accordance with the FHA, it determined only the Present Need (incorporating all prior changes in population, housing and household characteristics, as reflected in current housing conditions as of that time) and the Prospective Need (which did not yet exist, but was projected to be generated in the future)

> The Mount Laurel Doctrine and this fair share methodology address two basic types of LMI housing need: Present Need and Prospective Need. Present Need measures only existing substandard housing that is occupied by LMI HH. It does not include the nearly one million existing LMI HH in New Jersey who are considered cost-burdened, since COAH excluded cost- burdened households and their affordable housing needs from Present Need municipal housing obligations under the Fair Housing Act, a determination upheld by the Supreme Court. Prospective Need projects how many additional LMI HH will be in New Jersey in the future and need affordable housing
>
> [Kinsey March 24 Report, p. 13, emphasis added]

It therefore appears that both FSHC and the municipalities and their respective experts agree that the fair share affordable housing obligation is defined as the Present Need and Prospective Need. Neither party identifies any language in the FHA that authorizes the creation of a "separate and discrete" category of need beyond Present Need and Prospective Need, as ordered in the February 18th Ocean County opinion.

Dr. Kinsey's March 24th calculation instead justifies the inclusion of incremental LMI households emerging during the gap period by asserting (without attribution) that they represent "a form of Prospective Need":

> LMI HH affordable housing need that arose and accrued during 1999-2015 is a form of "Prospective Need" that, but for COAH's failure to adopt constitutional housing obligations during 1999-2014, would have been calculated and called "Prospective Need" for the post-1999 fair share housing obligation period
>
> [Kinsey March 24 Report, p. 23, emphasis added]

This assertion is in direct contradiction to the definition of Prospective Need in the Fair Housing Act, which clearly delineates the calculation as forward-facing, and defines its time period as ten years:

> Prospective need means a projection of housing needs based on development and growth which is reasonably likely to occur in a region or municipality…
>
> [FHA Section 304(j), (emphasis added)]
>
> It is the duty of COAH to…Adopt criteria and guidelines for…municipal determination of its present and prospective fair share of the housing need in a given region which shall be computed for a 10 year-period.
>
> [FHA Section 307(c)(1), (emphasis added)]

The February 17th *Bridging the Gap* report submitted by Special Master Richard Reading is unequivocal that the Gap period does not represent Prospective Need and cannot be calculated using a Prospective Need methodology, contradicting Dr. Kinsey's assertion in his March 24th response to the Court's February 18th opinion:

> The calculation of current needs of the affordable households formed during the sixteen year Gap Period is not a process that is imbedded in the Prior Round methodology, is not a projected (Prospective) need, but should be undertaken as a separate and discrete component of affordable housing need…
>
> …the continuing needs of LMI households formed during the gap period are different and distinct from the measurement of deficient housing units or the projection of future LMI households. Accordingly, the Gap period would necessitate a different methodology than those used for Present and Prospective Need.
>
> [Reading *Bridging the Gap* Report, p. 17, emphasis added]

This distinction is not merely semantic. Fundamentally, it distorts the definition of "prospective" and the purpose and construction of the calculation of Prospective Need to calculate "Prospective Need" for a period in the past. As explained by Dr. Kinsey in the passage above, "Prospective Need projects how many additional LMI HH will be in New Jersey in the future and need affordable housing." **This definition plainly cannot apply retrospectively to households that already exist**.

It is true that these households may have been included in the Prospective Need had that calculation been undertaken in 1999. That fact does not make them a part of the Prospective Need today. Using the same logic, the Round 1 methodology could have quantified all LMI households that emerged after some prior date after which the Mount Laurel Constitutional obligation was determined to be in effect, as those households would have represented a theoretical "Prospective Need" from an earlier time. It did not do so, but instead quantified Present Need and Prospective Need in accordance with the FHA. As repeatedly noted by ESI, it did so based on a fundamental economic distinction: Present Need and Prospective Need households do not currently have sound housing, while those households that would have constituted Prospective Need from some prior period do.

3.3 COST-BURDENED HOUSEHOLDS

Section 3 of ESI's *Gap Period Calculation* contains an extended discussion and taxonomy of what is in fact quantified by the gap methodology set forth by the Special Master and adopted by the Court in its February 18th opinion. That analysis includes a detailed discussed and taxonomy (reproduced below) of which incremental LMI households emerging during the gap period are definitionally included in the gap calculation:

TABLE 3.1: TAXONOMY OF INCREMENTAL LMI HOUSEHOLDS ADDED DURING THE GAP PERIOD

Characteristic	Possible Conditions	Inclusion in Gap Calculation
Housing Ownership	~~Own house without mortgage~~	LMI HH with significant housing assets are excluded from gap calculation
	Do not own house without mortgage	
Housing Unit Quality	~~Living in Inadequate Housing~~	LMI HH living in inadequate housing are included in present need and therefore excluded from gap calculation
	Living in Adequate Housing	
Housing Type	~~Living in market rate affordable housing~~	LMI households living in market rate housing affordable to LMI HHs are accounted for in secondary sources and excluded from gap calculation
	~~Living in deed-restricted affordable housing~~	
	Not living in market rate or deed-restricted affordable housing	LMI HH living in deed-restricted affordable housing will be accounted for through municipal credits and excluded from gap obligation

Therefore, the incremental LMI households identified by the gap period calculation as "formed but not satisfied during the gap period" are those that:

- Do not own their home free and clear of a mortgage (i.e. significant housing assets)
- Currently live in adequate quality housing
- Do not live in market rate units affordable to LMI HHs or deed restricted affordable housing

Put more simply, **the households identified by Ocean County's Court are LMI cost-burdened households living in adequate housing.**

[ESI March 24th *Gap Period Calculation*, p. 21, emphasis in original]

ESI's *Gap Period Calculation* report goes on to discuss the lengthy precedent for excluding the exclusion of cost-burden as a factor in determining the Present and Prospective Need within the fair share calculation.

COAH has considered and rejected the expansion of fair share obligations to include cost-burden as a factor in the determination of need. In fact*, AMG Realty* and COAH methodologies both explicitly reject their inclusion, a decision which has been repeatedly affirmed by Court decisions up to and including Mt. Laurel IV….this exclusion is not arbitrary but is well-reasoned and well justified going back to AMG Realty. COAH has also consistently declined to include cost-burdened as a factor within its determination of need; explained why it made this decision; and noted that the inclusion of cost-burden households would generate unrealistic fair share obligations, to the detriment of the fair share process

[ESI March 24th Gap Period Calculation, p. 20]

3.4 QUALIFYING VS. DISQUALIFYING CHARACTERISTICS

Importantly, ESI's analysis that cost-burdened households in sound housing are yielded by the gap calculation is not the subject of any material disagreement among the parties.[44] In addition, the precedent of excluding cost-burden from consideration in the fair share methodology is not in any dispute, as all parties agree that it has not previously been a consideration in the determination of fair share need.[45]

Instead, Dr. Kinsey's latest report portrays ESI's analysis and methodology as advocating the disqualification of an otherwise includable LMI household from affordable housing need purely because they are cost-burdened:

> While cost burden by itself is not a sufficient criterion for including households in the Present or Prospective Need, nor is it historical practice, nor fair, to exclude households otherwise includable in Prospective Need the moment they become cost burdened…
>
> [Kinsey March 24 Report, p. 14]

ESI's analysis and methodology make no such exclusion. In keeping with settled precedent and Prior Round methodologies, our calculation includes no consideration of cost-burden as a factor for inclusion or exclusion from the need. As Special Master Reading's *Bridging the Gap* report makes plain, it is Dr. Kinsey's methodology that has introduced cost-burden as a consideration in the need:

> FSHC's defense of its approach has been to suggest an increase in cost-burdened households that are among the Gap Period LMI households that have occupied non-deficient housing
>
> [Reading *Bridging the Gap* Report, p. 8]

ESI's analysis, by contrast, is built from a plain reading of the FHA as to the categories of need that are included in the fair share calculation. We find no basis for the quantification of a need beyond the Prospective Need and Present Need. Thus, **LMI households emerging during the gap period who have found sound housing are not disqualified due to their cost-burden status. Rather, these households have not been qualified as part of the need in the first place, because they do not meet the definition of Present Need or Prospective Need.**

To further understand this distinction, it is useful to return again to the categories of affordable housing need, as defined in the March 24th Kinsey report. Dr. Kinsey's full discussion is as follows:

> The Mount Laurel Doctrine and this fair share methodology address two basic types of LMI housing need: Present Need and Prospective Need. Present Need measures only existing substandard housing

[44] For example, Art Bernard's March 24th report stipulates: "it is clear that the vast majority of low and moderate-income households that formed during the so-called "gap period" found sound housing and are cost-burdened" (6).

[45] For example, Art Bernard's January 29th *Response to ESI Methodology* report stipulates that "the prior round methodologies do not include any households in the need because they are cost-burdened "(12).

> that is occupied by LMI HH. It does not include the nearly one million existing LMI HH in New Jersey who are considered cost-burdened, since COAH excluded cost- burdened households and their affordable housing needs from Present Need municipal housing obligations under the Fair Housing Act, a determination upheld by the Supreme Court. Prospective Need projects how many additional LMI HH will be in New Jersey in the future and need affordable housing.
>
> Prospective Need includes families, individual, people with special needs, and others that establish a new LMI HH during the Prospective Need period. This happens when existing New Jersey resident form new households, when immigrants from other states and countries move to New Jersey, and when the income of existing HH in New Jersey falls below the LMI limit. And some of these new LMI HH may become cost-burdened. While cost burden by itself is not a sufficient criterion for including households in the Present or Prospective Need, nor is it historical practice, nor fair, to exclude households otherwise includable in Prospective Need the moment they become cost burdened due to the lack of sufficient compliance with the constitutional obligation.
>
> [Kinsey March 24 Report, p. 13-14, emphasis added]

Several important points must be made in response to this passage. First, as noted above, the ESI methodology does not exclude households "the moment they become cost-burdened," because cost-burden status is not a consideration anywhere in our methodology.

Second, Dr. Kinsey's discussion of the types of affordable housing need in his methodology provides no basis on which to include gap period households. Dr. Kinsey explains that "the Mount Laurel Doctrine and this fair share methodology address two types of housing needs: Present Need and Prospective Need. Dr. Kinsey defines Present Need as measuring "only existing substandard housing that is occupied by LMI" and excluding the cost-burdened in sound housing, and defines the Prospective Need as "project(ing) how many additional LMI HH will be in the New Jersey in the future." The incremental LMI households from the gap period that have sound housing but are cost-burdened plainly fit neither of these categories as defined by Dr. Kinsey himself in the passage above. These households do not represent Present Need, which is evaluated on the soundness of housing units, not on cost burden status. They also do not represent Prospective Need, because they are not "additional LMI HH in the future" – they exist today**. It is only Dr. Kinsey's unsubstantiated assertion, in direct contradiction of the Special Master's analysis[46] and the Fair Housing Act definition, [47] that these households represent "a form of Prospective Need" that allows for their inclusion in the affordable housing need under his methodology.**

---

[46] Page 17 of his *Bridging the Gap* report reads (emphasis added):

> The calculation of current needs of the affordable households formed during the sixteen year Gap Period is not a process that is imbedded in the Prior Round methodology, is not a projected (Prospective) need, but should be undertaken as a separate and discrete component of affordable housing need…the continuing needs of LMI households formed during the gap period are different and distinct from the measurement of deficient housing units or the projection of future LMI households. Accordingly, the Gap period would necessitate a different methodology than those used for Present and Prospective Need.

[47] Section 304(J) reads "Prospective need means a projection of housing needs based on development and growth which is reasonably likely to occur in a region or municipality…" (emphasis added)

Third, Dr. Kinsey's final sentence attributes the cost-burden status of gap period households to "the lack of sufficient compliance with the Constitutional obligations, a reference to the administrative failings of COAH during that period. As ESI has discussed at length in our February 8th *Analysis of the Gap Period*[48] and March 24th *Gap Period Calculation*[49] reports, the causal connection between the rise in cost-burdened households over the gap period and COAH's administrative failings has been asserted but not demonstrated by FSHC, NJBA and their respective experts. While Dr. Kinsey asserts in his in his January 6, 2016 *Supplemental Report on Gap Period Need* that "the sharp increases in cost-burdened LMI HH are evidence of the repeated failures of COAH to adopt and enforce constitutional housing obligations" (9), data presented by NJBA expert Art Bernard illustrates clearly (1) not all cost-burdened households are LMI, and not all LMI households are cost-burdened; and (2) the rate of cost-burden increased far more rapidly for those households that were not LMI than for those that were LMI in the data presented by Mr. Bernard.[50] Therefore, the existence of an increase in cost-burdened households alone over the gap period does demonstrate a connection to COAH's administrative failings. Notably, neither the gap period methodology set forth in the Special Master's February 17th report nor any calculation set forth by Dr. Kinsey even attempt to answer empirically the question of attribution to COAH's failings. We maintain that this question defies practical calculation, due to the impossibility of "rewinding the clock" and determining the extent to which housing development would have been altered by the successful implementation of COAH rules in 1999.

Art Bernard's March 24th report also includes an extended discussion of the status of cost-burden gap period households in the fair share calculation that warrants discussion. Mr. Bernard writes as follows with respect to ESI's methodology.

> It is clear that the vast majority of low and moderate-income households that formed during the so-called "gap period" found sound housing and are cost-burdened. Dr. Angelides also would not include those households as part of the housing obligation because they found sound housing. Dr. Angelides' logic is inconsistent with the whole planning rationale for the implementation of the Mt. Laurel decision. Persuant to Dr. Angelides logic, there would never be a reason to assign housing obligation – because virtually all low moderate-income households eventually find housing.
>
> During the court's deliberations on this issue, municipal representatives have asserted that NJBA and FSHC are attempting to add a new category to housing need, the cost burdened. This is not true. It is true that I am advocating the inclusion of all low and moderate income households formed during the so-called gap period. I highlight the cost burdened households to shine a light on the evils of exclusionary zoning.
>
> [March 24 Bernard Report, p. 6, emphasis added]

[48] See the "Dynamic Nature of Housing Market" section, p. 7-9.

[49] See "Linkage Between COAH Failings and Gap Households is Speculative" section, p. 24--25

[50] See p.16-18 of ESI's February 8th *Analysis of the Gap Period* report for full discussion and data

Within this passage, Mr. Bernard argues that the same logic that would omit gap period households from the quantification of Round 3 need would invalidate all housing obligation "because virtually all low moderate-income households eventually find housing." This is plainly not the case within the categories of need defined in the Fair Housing Act, and it is plainly not true in the case of ESI methodology, which assigns obligations for two categories of households which may "eventually find housing" – the Present Need and the Prospective Need. The distinction between those Present Need and Prospective Need households and those in the gap period is not based on their respective prospects to "eventually find housing," it is based on whether they currently have sound housing, which the gap period households in question do and the Present Need and Prospective Need households do not.

Further, while Mr. Bernard raises the prospect of a "slippery slope" with regard to the elimination of obligations, the logic of his argument leads directly to the inverse result, the explosion of the need. Mr. Bernard's advocacy of "the inclusion of all low and moderate income households formed during the gap period," including those that "found housing and are cost burden" fails to reckon with the fact that these households are similarly situated in their current circumstance to hundreds of thousands of other LMI households who may be cost-burdened. As noted in ESI's February 8th Analysis *of the Gap Period* report "the standard suggested appears to be that cost-burden is a relevant consideration for those incremental LMI households emerging between 1999 and 2015, but for no other households before or after that time, even though those households are indistinguishable with regard to their current housing circumstances" (19).

Summary

In sum, Dr. Kinsey's fair share framework echoes ESI's in its inclusion of only the categories of Present Need and Prospective Need set forth in the Fair Housing Act. Dr. Kinsey inaccurately accuses ESI of advocating the disqualification of gap period households from the Prospective Need because of their cost-burden status. This assertion is inaccurate, because cost-burden is not a consideration in ESI's methodology, in accordance with all precedent and Prior Round methodologies. Instead, we demonstrate above that Dr. Kinsey's own definitions of Present Need and Prospective Need plainly do not include gap period households that have found sound housing, and that therefore these households are never "qualified" as part of the need. It is only Dr. Kinsey's unsubstantiated assertion, in direct contradiction of the Special Master's analysis and the Fair Housing Act definition, that these households represent "a form of Prospective Need" that allows for their inclusion in the affordable housing need under his methodology.

4.0 REALISTIC POTENTIAL TO IMPLEMENT ASSIGNED OBLIGATIONS

Section 4 of ESI's March 24th *Gap Period Calculation* report reviewed the Round 3 obligations calculated by ESI and Dr. Kinsey in the context of the whether those obligations are reasonable and achievable given market conditions and the historic production of affordable housing through the COAH process. That analysis indicates that assigned obligations for the next ten years within the January Kinsey model far exceeded a level that is "realistically possible to implement," as is required by COAH's own interpretation of its statutory obligation under the Fair Housing Act. Further, it found that within ESI's obligation calculation, the imposition of a gap period obligation resulting in obligations well above realistic expectations for the level of affordable housing production that can be supported by affordable housing development.

This section reviews and updates that analysis in light of the March Kinsey/FSHC submission and revised calculation. As noted throughout this report, the revised Kinsey model calculates still higher obligations relative to previous submissions, which plainly are not realistically possible to implement. This section further responds to discussion in Art Bernard's March 24th submission regarding the appropriateness of the magnitude of obligations and their realistic potential to be implemented as a consideration in the methodology. Finally, this section reinforces the critical point that given the proposed cumulative methodology, the assignment of municipal obligations well in excess of what is possible to implement for Round 3 is not a one-time problem, but will frustrate municipal attempts at voluntary compliance with the process in perpetuity, since unsatisfied obligations will roll over to future rounds, in addition to newly assigned Present Need and Prospective Need obligations for those rounds.

4.1 FHA AND COAH GUIDANCE ON REALISTIC OBLIGATIONS

Section 4 of ESI's March 24th *Gap Period Calculation* report includes an extended review of the Fair Housing Act, and illustrates that the act makes clear its text the legislature's vision for the promulgation of realistic obligations within the fair share process. Relevant sections are repeated below:

> The interest of all citizens, including low and moderate income families in need of affordable housing, and the needs of the workforce, would be best served by a comprehensive planning and implementation response to this constitutional obligation.
>
> [FHA 302c, emphasis added]
>
> There are a number of essential ingredients to a comprehensive planning and implementation response, including the establishment of reasonable fair share housing guidelines and standards, the initial determination of fair share by officials at the municipal level and the preparation of a municipal housing element, State review of the local fair share study and housing element, and continuous State funding for low and moderate income housing to replace the federal housing subsidy programs which have been almost completely eliminated.
>
> [FHA 302d, emphasis added]

> The Legislature declares that the State's preference for the resolution of existing and future disputes involving exclusionary zoning is the mediation and review process set forth in this act and not litigation, and that it is the intention of this act to provide various alternatives to the use of the builder's remedy as a method of achieving fair share housing.
>
> [FHA 303, emphasis added]

The FHA thus posits that the fair share process it outlines represents a "comprehensive planning and implementation response" to the Mount Laurel Constitutional obligation, and that this planning process is defined in part by "the establishment of reasonable fair share housing guidelines and standards," and is intended to move the implementation mechanism away from "the use of the builder's remedy.'"

COAH's implementation of the FHA in its Round 1 methodology and process explicitly recognizes and implements this statutory obligation, as demonstrated by its response to comments regarding the exclusion of cost-burdened as a consideration in the quantification of the Present Need:

> COMMENT: In determining need, the Council should include those households who are spending a disproportionate amount of their income on housing.
>
> RESPONSE: The Council decided that present need should be a measure of low and moderate income households residing in deficient housing. Moreover this determination reflects the Council's statutory obligation to adopt criteria which make fulfillment of the municipal obligation realistically possible. To include within this estimate those low and moderate income households paying a disproportionate share of their income for housing would have resulted in a need that was beyond the possibility to implement during the six year certification period or during any period in the foreseeable future. Those households spending a disproportionate amount on sound housing exhibit an income problem as opposed to a housing problem. Moreover, the Council's definition of need is in keeping with the court's approach to low and moderate income housing need.
>
> [18 N.J.R. 1529, emphasis added]

COAH's response thus explicitly embraces its "statutory obligation" (based on the FHA) requiring "criteria which make the fulfillment of the municipal obligation realistically possible" and thereby rejects the assignment of "need that was beyond the possibility to implement."

Bernard Submission

Art Bernard's March 24th submission presents a conflicting account of this statutory obligation in several places. First, Mr. Bernard (echoing previous submissions by the NJBA) cites the *AMG Realty* decision as the basis for ignoring the results of a fair share calculation in evaluating its reasonableness:

> I have also been guided by the words of Judge Serpentelli, who said the goal of the fair share methodology was not to achieve a specific result. The goal is to find a reasonable methodology using reliable data and as few assumptions as possible.

> The pivotal question is not whether the numbers are too high or low, but whether the methodology that produces the numbers is reasonable... (AMG Realty vs.Warren Twp)

[Bernard March 24th report, p. 2]

While Mr. Bernard has accurately quoted the holding of the AMG opinion, the Legislature enacted the FHA about a year after the issuance of the AMG decision in July of 1984 and the statements made during the hearings that culminated in the FHA reveal that the Legislature clearly did not view the obligations generated by the AMG formula as reasonable and realistic. The Fair Housing Act, not AMG Realty, is the controlling statute for the fair share process and the determination of need. Indeed, the Fair Housing Act represents the legislature's direct response to the AMG decision and previous Mt. Laurel decisions in the court, and explicitly brings the determination and implementation of obligations into the COAH process as set forth in the act. The relevant question, therefore, is not whether AMG Realty calls for a methodology that defines the realistic potential to implement obligations as a relevant consideration, but whether the Fair Housing Act includes such a consideration. As reviewed above, it plainly does, and COAH's interpretation of the FHA clearly embraces this "statutory obligation."

Later in his March 24th report, in his section entitled "Is the Obligation Too Big?" Mr. Bernard returns to the AMG decision, and then cites COAH's response to a Round 2 comment regarding the assignment of need that is not likely to be implemented. This comment and response is reproduced in part below:

> Comment: The Council should reduce its estimates of need because it is not likely that the State will be able to produce the housing to meet the need.
>
> Response: The council has included low and moderate-income households living in substandard units and projections of low and moderate-income household formation in its estimates of need. It has also adopted a cumulative approach to estimating need, establishing the principle that the need does not disappear if unaddressed…..the commenter's remarks seem predicated on new construction activity by the private sector. Yet, there are several other ways to address much of the need (other than new construction activity by the private sector). Approximately half of the need may be addressed through rehabilitation activity. A municipality may choose to enter a regional contribution agreement, or create accessory apartments, or construct its own housing through a non-profit corporation.
>
> [NJR 5766]

Several important points emerge from this passage. First, COAH explicitly states, in defense of its estimates, that it has included "low and moderate-income households living in substandard units" (i.e. Present Need) and "projections of low and moderate-income household formation" (i.e. Prospective Need). As reviewed in Section 3, Bernard and FSHC/Kinsey now advocate the inclusion of an additional category of need from the gap period, which as calculated by Dr. Kinsey increases obligations well beyond those defended by COAH in the response above.

Second, COAH's response cites a number of ways beyond new construction activity that the need may be addressed. The discussion of these alternatives is a clear indication that COAH did consider the possibility to implement its obligations to be a relevant consideration in their assignment. Indeed, according to Mr. Bernard's invocation of the AMG opinion, COAH would simply have responded to the

commenter that the level of obligation was immaterial to its legitimacy. It does not do so, but instead argues that assigned obligations are in fact reasonable to implement, though not through private market activity alone.

Third, COAH's discussion of the potential implementation mechanisms other than private market construction illustrate the stark differences in realistic potential of the Round 2 obligations and those calculated by Dr. Kinsey for Round 3. Where COAH's response argues that "approximately half of the need may be addressed through rehabilitation activity" (out of a total obligation of approximately 86,000 units), Dr. Kinsey's calculation yields an obligation of 83,000 Present Need units out of a total pre-cap obligation of 489,000 – only 17%. Further, the regional contribution agreements cited by COAH as a compliance mechanism, a factor that formed the basis in large measure for COAH's suggestion that the need can indeed be met, are no longer available.

In sum, COAH's response does not indicate an indifference to the reasonable opportunity to implement assigned obligations, but instead argues that sufficient mechanisms exist for the obligations to be implemented. This is consistent with COAH's statement that its determination of obligations "reflects the Council's statutory obligation to adopt criteria which make the fulfillment of the municipal obligation realistically possible (18 N.J.R. 1529). As revealed by COAH's response, the circumstances leading to that determination are wildly different from those set forth in Dr. Kinsey's calculations of need for Round 3. Where COAH's Round 2 obligations included only Prospective Need and Present Need (in addition to cumulative obligations remaining from the Prior cycle, which are common to both circumstances), Dr. Kinsey calculates an additive category of need from the prior (gap) period, increasingly obligations significantly. Where approximately 50 percent of obligations could be satisfied through rehabilitation activity in Round 2, the corresponding figure in Dr. Kinsey's calculations is 17 percent. Where regional contribution agreements could be used as a mechanism to satisfy a substantial portion of obligations in Round 2, they are no longer available. In short, COAH's determination that the Round 2 obligation was realistic to implement through a combination of private market and non-private market activity was made based on an entirely different set of facts than those pertaining to Dr. Kinsey's calculation of obligation and the current capacity of municipalities to fulfill them.

4.2 REALISTIC DEVELOPMENT POTENTIAL

In light of these differing circumstances discussed above, it is worth reviewing the discussion in Section 4 of ESI's March 24th *Gap Calculation* report of the realistic development potential for affordable housing over the next ten years. That report discussed the realistic potential through benchmarks of both historical affordable housing production within the COAH process, and forward-looking patterns of growth and development in New Jersey, which bear on the market potential for inclusionary zoning development activity.

As described in that report, COAH's 2003 annual report stated that through December 31, 2003, credits had been granted for approximately 35,000 complete or under construction New Construction units.

> The period between the publishing or Round 1 rules in June 1986 and the reporting date for these figures at the conclusion of 2003 covers more than seventeen years (and in fact includes units built outside of those years, since the FHA and COAH's Round 1 rules give credits for affordable units built

> back to 1980). Those seventeen and half years comprise a period in which the COAH implementation regime was fully functioning, and the New Jersey housing market was largely experiencing growth. During those years, COAH certified the completion or construction of approximately 35,000 new construction affordable housing units, or **approximately 2,000 per year.**
>
> [ESI March 24th *Gap Calculation* report, p. 30-31, emphasis in original]

Data and projections over private housing market activity submitted by Dr. Robert Powell in his September 22nd report for the New Jersey State League of Municipalities[51] reaches a similar conclusion with respect to the realistic development potential for inclusionary zoning. Dr. Powell's report reviews economic, demographic and housing market trends, and produces estimates of the number of deed-restricted affordable housing units that might reasonably be expected to be constructed between 2015 and 2025 based on these factors.[52] Dr. Powell estimates that the "achievable" level of production for deed-restricted affordable units through inclusionary development is 1,728 per year, while the "optimistic" level is 2,400:

TABLE 4.1: POWELL REPORT SCENARIOS FOR AFFORDABLE HOUSING PRODUCTION, 2015-2025

Alternative Growth Assumptions	Aggregate 10-Year Total New units 2015-2025	Adjusted 10-Year Totals Excluding 20% in Urban Aid Towns	New Units 2015-2025 Subject to Inclusionary Development Plan	Projected Total New Affordable Units 2015-2025	Projected Average Annual New Affordable Units 2015-2025
Very Aggressive	400,000	320,000	192,000	38,400	**3,840**
Optimistic	250,000	200,000	120,000	24,000	**2,400**
Achievable	180,000	144,000	86,400	17,280	**1,728**

Thus, the annual realistic development potential identified by Dr. Powell is closely aligned with the observed affordable housing activity during the years in which COAH's implementation regime was fully functioning. **Each benchmark indicates a realistic new construction development potential on the order of 2,000 units per year.**

4.3 ROUND 3 PROPOSED OBLIGATIONS AND IMPLICATIONS OF GAP PERIOD

This benchmark for the realistic potentially can be compared to the annualized Round 3 obligations for 2015 – 2025 yielded by the Kinsey and ESI March 24th methodologies. While new construction activity does not represent the entirely of affordable housing production in satisfying assigned obligations, and

[51] The report is entitled: *Demographic and Economic Constraints on the Inclusionary Zoning Strategy Utilized for the Production of Low and Moderate Income Housing in New Jersey.* Submitted September 22, 2015 to the New Jersey State League of Municipalities by Robert S. Powell, Jr., Ph.D. and Gerald Doherty, M.A. of Nassau Capital Advisors, LLC.

[52] We note that Dr. Powell submitted a supplement to this report on March 24th, 2016 with a focus on Region 4 (Mercer – Monmouth – Ocean Counties).

obligations reported by Dr. Kinsey do not account for municipal allocation caps or prior credits, it is nonetheless apparent that assigned obligations yielded by Dr. Kinsey's analysis are much greater than what is realistic to implement. The assignment of such obligations therefore is inconsistent with the statutory obligation under the FHA to "adopt criteria which make fulfillment of the municipal obligation realistically possible" (18 N.J.R. 1529).

Table 4.2 shows calculated affordable housing obligations by region and statewide yielded by the March 2016 Kinsey model. Prior to the imposition of allocation caps and credits, total obligations, including the gap period, total 489,000. New construction obligations emerging from the Prospective Need period and gap period alone total approximately 320,000, or 32,000 per year.

TABLE 4.2 - MARCH 2016 FSHC/KINSEY MODEL
CALCULATED AFFORDABLE HOUSING OBLIGATIONS (PRIOR TO CAPS OR CREDITS)

Region	Prior Round Obligation (1987 – 1999)	Present Need (2015)	Prospective Need (2015-2025)	Gap Period Allocation (1999 – 2015)	Total
1	12,471	30,705	45,300	19,286	107,762
2	9,294	22,336	31,126	23,662	86,418
3	13,323	8,660	26,348	25,241	73,572
4	27,359	8,153	30,234	33,035	98,781
5	14,056	6,704	28,226	29,487	78,473
6	9,372	6,253	13,428	15,150	44,203
TOTAL	**85,875**	**82,811**	**174,662**	**145,861**	**489,209**

Certainly, these figures would be reduced by the application of municipal caps and credits. Nonetheless, they are wildly out of scale with the market potential for inclusionary development, or the history of affordable housing production within the COAH regime, which suggest a benchmark of approximately 2,000 units per year. Indeed, **they are well above benchmarks of *total* housing development on an annual basis in New Jersey**.[53] The obligation yielded by the March 2016 Kinsey model, even more so than previous iterations of the Kinsey model, is clearly not reasonable and not possible to achieve within the fair share process.

Section 4 of ESI's March 24th *Gap Period Calculation* report also reviews obligations calculated by ESI with and without the gap period allocation. Tables showing those calculated obligations are reproduced below.

[53] As reported in Section 6.3 of ESI's *Need and Obligations* report, statewide certificates of occupancy totaled approximately 318,000 from 1999 – 2014, or approximately 21,000 per year.

TABLE 4.3 - ESI CALCULATED INITIAL SUMMARY OBLIGATIONS, 2015-2025

Region	Prior Round Obligation (1987 – 1999)	Present Need (2015)	Prospective Need (2015-2025)	Total
1	12,469	15,289	11,660	39,418
2	9,382	5,351	4,536	19,269
3	13,323	5,608	7,890	26,821
4	27,367	4,239	3,171	34,777
5	14,055	2,712	6,770	23,537
6	9,257	0	0	9,257
TOTAL	**85,853**	**33,199**	**34,027**	**153,079**

TABLE 4.4 - ESI CALCULATED OBLIGATIONS INCLUDING GAP PERIOD

Region	Prior Round Obligation (1987 – 1999)	Present Need (2015)	Prospective Need (2015-2025)	Gap Period Allocation (2015-2025)	Total
1	12,469	15,444	11,505	0	39,418
2	9,382	5,351	4,536	0	19,269
3	13,323	4,432	9,066	11,968	38,789
4	27,367	4,239	3,171	6,945	41,722
5	14,055	2,712	6,770	17,311	40,848
6	9,257	0	0	949	10,206
TOTAL	**85,853**	**32,178**	**35,048**	**37,173**	**190,252**

ESI's *Need and Obligations* report calculates a total initial summary obligation (after the application of caps but prior to the application of credits) of 153,000 units statewide. Of that obligation, Prospective Need represents 34,000 units, or 3,400 units per year, an obligation 70 percent greater than the 2,000 unit benchmark reported by COAH historically and above the "realistic" and "aggressive" development scenarios in the Powell report. Further, additional new construction obligations may remain from the Prior Round obligation. However, a percentage of the obligation may be satisfied with bonuses. Therefore, the exact new construction obligation under this methodology is unknown at this time. It appears that these obligations are aggressive relative to anticipated constructed activity, but are certainly far more realistic than those proposed by FSHC.

With the imposition of an additional new construction obligation for the gap period, as calculated by the methodology set forth in ESI's March 24th Gap Period Calculation report, the new construction obligation for Prospective Need period and the Gap period more than doubles to 72,000 units, or 7,200 per year. This figure is more than three times the benchmark for affordable housing activity observed in historic production levels and anticipated market activity. **The imposition of the gap period**

obligation, therefore, drives municipal obligations well in excess of the level that is realistic to implement over the course of Round 3.

4.4 IMPLICATIONS OF EXCESSIVE CUMULATIVE OBLIGATIONS

Finally, it is important to consider the long-term implications of the imposition of obligations far in excess of what is realistic for a municipality to produce. Due to the cumulative nature of housing obligations under the proposed methodology, obligations in excess of realistic production potential that go unsatisfied remain with a municipality for successive Rounds, where they are added to the new Present Need and Prospective Need calculated for subsequent Rounds. The imposition of such obligations thus risks saddling municipalities with unachievable obligations in perpetuity.

The cumulative impacts of excessive obligations are described as follows in ESI's March 24th *Gap Period Calculation* report:

> It is also important to note that by the cumulative methodology endorsed by the Court, the assignment of unrealistic obligations for Round 3 will result in an excessive unfulfilled Round 3 obligation that will roll over into Round 4.[54] This unfulfilled obligation is in addition to the proportion of the gap obligation which municipalities may petition to defer into Round 4, according to Court's February 18th opinion. Thus, according to this methodology and Dr. Kinsey's calculation, Round 4 would (be) likely to begin with hundreds of thousands of units of obligations imposed on municipalities even prior to the imposition of the Present Need and Prospective Need for that ten year period, which themselves would likely add tens or hundreds of thousands of additional units of obligation for that period. Such growth in obligations is plainly neither sustainable nor realistic, nor does it provide municipalities with a realistic path to voluntary compliance and the actual production of affordable housing.
>
> [ESI March 24th *Gap Period Calculation*, p. 33-34]

Dr. Kinsey's updated calculation renders the dire scenario described in this example even more dire because the new calculations impose even more unrealistic obligations than those calculated in previous iterations of his methodology.

Two additional points are important to make regarding this cumulative effect in response to points raised by Art Bernard in his March 24th report. First, Mr. Bernard reports on page 2 of his report that ESI has calculated an "accrued housing obligation per year" of 1,404 units. This "per year" calculation involves dividing an obligation calculated for a ten year period (2015 – 2025) over a 26 year period (1999 – 2025). In addition to violating basic mathematical principles, the 26 year time frame obscures the relevant standard on which to judge the reasonableness of obligations – the realistic ability for municipalities to implement those obligations within the round in which they are assigned. The ten year obligation is relevant not only because the FHA requires obligations that are realistically possible to

[54] For example, assuming affordable housing production of approximately 2,000 units a year, in accordance with market projections and observed production under COAH, an obligation of 20,000 units a year over the 2015-2025 period would yield an unsatisfied obligation of approximately 180,000 units that would carry over to Round 4.

implement, but because under the suggested cumulative methodology, those obligations that are not achieved stay with municipalities for the next Round. The fact that those assigned obligations may appear more reasonable on an annualized basis when calculated over a denominator of 26 years does not change the basic facts regarding their realistic potential to be implemented by municipalities.[55]

Mr. Bernard's March 24th report also asserts among its "Conclusions" that:

> Neither the Court nor COAH has assumed that all the affordable housing assigned to each municipality will be addressed in any ten-year period.
>
> [March 24 Bernard report, p. 51]

First, nowhere in ESI's analysis have we stated that all affordable housing obligations will be addressed in a given period by each municipality. Instead, we have maintained that the FHA requires the obligations must be "realistically possible" to implement. Second, this line of reasoning as a justification for the assignment of unrealistic obligations again leads to the maintenance of these excessive obligations in perpetuity under a cumulative system. **Within this framework, obligations beyond levels that are realistic to address will go unsatisfied, and by definition will be included in Round 4, combining with newly assigned Present Need and Prospective Need obligations to yet again generate unrealistic obligations**. Such growth in obligations, frustrating municipal compliance and the ability to generate affordable housing through sound planning policy rather than the builder's remedy method, is precisely the opposite outcome to what is envisioned in and mandated by the FHA.

Summary

The conclusion to ESI's March 24th *Gap Period Calculation* report summarizes the implications of the assignment of municipal obligations beyond what is realistically possible to implement as follows:

> Assignment of excessive obligations defies what COAH termed the "statutory obligation" under the FHA to "adopt criteria which make fulfillment of the municipal obligation realistically possible."[56] As a practical matter, assigning obligations far beyond what the market can realistically support is unlikely to generate additional affordable housing production. Instead, excessive obligations likely frustrate municipal efforts at voluntary compliance, leading the production of affordable housing out of the comprehensive planning and implementation framework envisioned by the FHA and back to the builder's remedy method.
>
> Further, under the suggested cumulative methodology, the assignment of excessive Round 3 obligations is not a one-time occurrence but will instead remain with municipalities indefinitely in the form of

[55] It is worth noting that the Court and Special Master have recommended that municipalities be given the option to defer a portion of their gap allocation to the Fourth Round under certain conditions. While this provision may be helpful in the implementation of Third Round plans, it does not solve the fundamental issue of the intractability of excessive obligations under a cumulative methodology. Simply deferring obligations to the Fourth Round adds another component of Fourth Round need (deferred gap allocation) which would be added to Prospective Need, Present Need, and Prior Round unsatisfied obligations, increasingly the likelihood that Round 4 obligations will continue to be in excess of realistic levels.

[56] 18 N.J.R 1529

> unsatisfied obligations rolling over into each new cycle, in addition to the newly assigned Present Need and Prospective Need for each round. Such growth in obligations is neither sustainable nor realistic relative to market capabilities, and therefore inconsistent with the language of the FHA, and does not provide municipalities with a realistic path to voluntary compliance as envisioned by the Fair Housing Act.
>
> [ESI *Gap Period Calculation*, p. 35]

This analysis is only underscored by the updated obligations yielded by the March 24th Kinsey/FSHC model, which define municipal obligations even larger than those calculated in previous iterations of the Kinsey model. New construction obligations for Round 3 according to Dr. Kinsey's new calculations are 32,000 per year for the 2015 – 2025 period (prior to the implementation of caps and credits), wildly in excess of the 2,000 per year affordable housing benchmark based on the market potential for inclusionary development and the history of affordable housing production within the COAH regime. Such obligations are plainly not reasonable and not possible to achieve within the fair share process based on municipal compliance and sound planning.

APPENDIX A – LIST OF ESI METHODOLOGY REPORTS AND SUBMISSIONS

Date Submitted	Full Report Title	Shortened Title
9/24/2015	Review and Analysis of Report Prepared by David N. Kinsey, PhD Entitled "New Jersey Low and Moderate Income Housing Obligations for 1999 – 2025"	*Review and Analysis*
10/22/2015	ESI Comments on *Response to New Jersey State League of Municipalities' Expert Reports by Econsult Solutions, Inc. and Nassau Capital Advisors, LLC, September 2015, on Low and Moderate Income Housing Obligations*, by David N. Kinsey PhD	*October 22 Response*
11/6/2015	ESI Comments on *Preliminary Review and Assessment of Low and Moderate Income Housing needs of Ocean County Municipalities*	*Comments on Preliminary Review and Assessment*
12/8/2015	ESI Response to Ocean County Third Revised Case Management Order	*Response to Third Case Management Order*
12/30/2015	New Jersey Affordable Housing Need and Obligations (initial)	*December Need and Obligations*
2/8/2016	ESI Analysis of the Gap Period (1999 – 2015)	*Analysis of the Gap Period*
2/19/2016	ESI Response to Comments Regarding *ESI Affordable Housing Need and Obligations* Report	*February 19 Response to Comments*
3/24/2016	ESI Gap Period Calculation	*Gap Period Calculation*
3/24/2016	New Jersey Affordable Housing Need and Obligations (updated)	*Need and Obligations*