

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS  
ENERGY FACILITY SITING BOARD

IN RE: Application of  
Invenergy Thermal Development LLC's  
Proposal for Clear River Energy Center

Docket No. SB 2015-06

**PRE-FILED SUPPLEMENTAL  
DIRECT TESTIMONY**

**OF**

**ROBERT M. FAGAN**

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## SUMMARY

Mr. Fagan's Pre-Filed Testimony in both PUC Docket 4609 and this EFSB Docket 2015-06 addressed whether there is a need for the Invenergy power plant. Mr. Fagan is a mechanical engineer and energy economics analyst with over 25 years of experience in those fields.

Mr. Fagan's previous Pre-Filed Testimony was that there is no short-, medium-, or long-term reliability need for the Invenergy plant. In this Supplemental Pre-Filed Testimony, Mr. Fagan analyzes the meaning and importance of the ISO's decision, in September 2017, to disqualify Invenergy's Turbine Two from participation in Forward Capacity Auction-12 (FCA-12) held on February 5, 2018. Specifically, Mr. Fagan demonstrates how Invenergy's recent disqualification by the ISO supports and further buttresses his previously stated conclusion that the Invenergy plant is not needed for short-, medium-, or long-term reliability.

The four exhibits to Mr. Fagan's Supplemental Pre-Filed Testimony are all ISO-generated documents; the data in these exhibits directly support Mr. Fagan's conclusions.

February 23, 2018

1 Direct Testimony of Robert Fagan

2 **Introduction**

3 **Q. Please state your name and occupation.**

4 A. My name is Robert M. Fagan and I am a Principal Associate at Synapse Energy

5 Economics.

6 **Q. Please describe Synapse Energy Economics.**

7 A. Synapse Energy Economics is a research and consulting firm specializing in electricity

8 industry regulation, planning and analysis. Synapse works for a variety of clients, with an

9 emphasis on consumer advocates, regulatory commissions, and environmental advocates.

10 **Q. Are you the same Robert M. Fagan who submitted direct testimony in June of 2016 in**  
11 **the Rhode Island Public Utilities Commission (RI PUC) Advisory Opinion case, and in August**  
12 **2017 in this Rhode Island Energy Facility Siting Board (RI EFSB) docket?**

13 A. Yes.

14 **Q. Please summarize your qualifications.**

15 A. I am a mechanical engineer and energy economics analyst, and I've analyzed energy

16 industry issues for more than 30 years. My activities focus on many aspects of the electric

17 power industry, in particular: production cost modeling of electric power systems, general

18 economic and technical analysis of electric supply and delivery systems, wholesale and retail

19 electricity provision, energy and capacity market structures, renewable resource alternatives,

20 including wind and solar PV, and assessment and implementation of energy efficiency and

21 demand response alternatives. I hold an MA from Boston University in energy and

1 environmental studies and a BS from Clarkson University in mechanical engineering.

2 **Q. On whose behalf are you testifying in this case?**

3 A. I am testifying on behalf of the Conservation Law Foundation ("CLF").

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of this testimony is to supplement my previous pre-filed testimony in this  
6 docket to address the impact of the disqualification of Turbine Two from participation in ISO  
7 New England's Forward Capacity Auction #12 (FCA 12, completed earlier this month) as it  
8 relates to the need for Invenergy's proposed plant.<sup>1</sup>

9 **Q. What documents do you rely upon in your analysis, and for your findings and**  
10 **observations?**

11 A. I rely primarily upon the following four documents, which I include as Exhibits to this  
12 testimony:

- 13 1. RMF-1 ISO NE Letter – Disqualification of Second Turbine from FCA 12
- 14 2. RMF-2 ISO NE FCA 12 Results Press Release
- 15 3. RMF-3 ISO NE Dynamic De-list Bid Threshold (DDBT) Filing
- 16 4. RMF-4 ISO NE Final Draft 2018 Annual Energy Forecast & Draft 2018 Summer Peak Forecast  
17 for Region and States

18  
19 As necessary, I also reference in my testimony additional material I used to develop this  
20 evidence.

21 **Q. Please summarize your understanding of ISO NE's disqualification of Invenergy's**  
22 **second turbine (at the proposed plant) from participation in FCA 12.**

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<sup>1</sup> Rhode Island Energy Facility Siting Board Application, Clear River Energy Center, Burrillville, Rhode Island.  
Prepared by ESS Group, Inc. October 28, 2015.

1 A. Based on the contents of a confidential letter from ISO NE to Invenergy,<sup>2</sup> I understand  
2 that ISO NE disqualified the proposed second turbine unit from participating in ISO NE's FCA 12  
3 based on its failure to adhere to Critical Path Scheduling (CPS) requirements present in the ISO  
4 NE market rules on forward capacity market participation, which are part of ISO NE's Open  
5 Access Transmission Tariff (OATT).<sup>3</sup> The CPS requirements include obtaining the RI EFSB permit  
6 and obtaining the Rhode Island Department of Environmental Management (RI DEM) air quality  
7 permit; ISO NE also indicates that responsibility for interconnection to the grid is not resolved.  
8 For these reasons, ISO NE disqualified Invenergy's second turbine from participating in FCA 12.

9 **Q. What does the disqualification mean?**

10 A. It means that Invenergy was not in a position to obtain a Capacity Supply Obligation  
11 (CSO) for the second turbine for the Capacity Commitment Period (CCP) associated with FCA 12,  
12 2021/2022, which begins on June 1, 2021.

13 **Q. From a reliability need perspective, does it matter that Invenergy did not obtain a**  
14 **CSO for its second turbine through FCA 12?**

15 A. No, it doesn't matter, because other less expensive resources provided all the capacity  
16 required to meet the needs as estimated in FCA 12 for CCP 12, which is for the period  
17 2021/2022.

18 **Q. Did any new large combined cycle power plant clear in the FCA 12 auction?**

19 A. No. Exhibit RMF-2 contains the ISO NE press release summarizing the results of FCA 12.

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<sup>2</sup> Confidential Exhibit RMF-1.

<sup>3</sup> ISO NE Open Access Transmission Tariff Section III.13.1.1.2.4.

1 The auction cleared at a low price of \$4.63/kW-month, and ISO NE indicated this low price  
2 arose from "a surplus of capacity in the region"; 1,103 MW of "surplus" capacity was procured  
3 in FCA 12. The price was common to all locations in New England. For the third FCM auction in  
4 a row, the Southeast New England (SENE) zone and the rest of New England cleared at the  
5 same price - there was no binding transmission constraint between the regions, meaning that  
6 all capacity resources in New England compete to meet the overall requirements.<sup>4</sup>

7 **Q. If Invenergy's proposed second turbine unit had been qualified to participate in the**  
8 **auction, would it have cleared the auction?**

9 A. Likely not. While I do not know what Invenergy's bid would have been, the clearing  
10 price at auction was significantly less than a bid price that would be expected from a new  
11 combined cycle unit.

12 **Q. How do you know this?**

13 A. Through public information available from ISO NE. ISO NE has recently completed a  
14 request to FERC to change its "Dynamic De-List Bid Threshold" (DDBT) for its forward capacity  
15 auctions commencing with FCA 13, which will be held in February 2019 for the capacity  
16 commitment period 2022/2023, which commences June 1, 2022. This is the ISO NE forward  
17 capacity auction in which Invenergy's second turbine would next be available to participate.  
18 ISO NE's DDBT tariff filing request is included as Exhibit RMF-3. The DDBT is a metric used to

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<sup>4</sup> While the auction configuration defines SENE as a separate zone for the purpose of testing whether or not "localized" SENE resources will be needed to meet resource adequacy needs in light of possible transmission constraints, the constraint has not been binding in three consecutive auctions.

1 help ensure that no supplier-side market power abuse is wielded in the FCM auction.<sup>5</sup> In its  
2 application to FERC for a change to the DDBT, ISO NE includes the rationale for the change –  
3 which is based on the relative surplus that exists in the ISO NE capacity market at this time. The  
4 application, which includes a transmittal letter and testimony from ISO NE (from Dr. Patil and  
5 Mr. Bradley), clearly states that the rationale reflects the relative surplus in the NE capacity  
6 market, and that ISO NE doesn't expect these surplus conditions to change "for near future  
7 auctions".<sup>6</sup> The DDBT changes would be in effect for three years, FCA 13 through FCA 15,  
8 though ISO NE would have an opportunity to further update the value earlier than FCA 15.<sup>7</sup>

9 **Q. Please explain.**

10 A. The following paragraph is taken directly from page 8 of ISO NE's Transmittal Letter, and  
11 describes the circumstance:

12 "Under these conditions [market condition changes leading to surplus], a reduction in the DDBT  
13 is warranted.<sup>26</sup> **First, it is reasonable to assume that a marginal de-list bid from an existing**  
14 **resource will set the clearing price.**<sup>27</sup> **The cost of new entry is well above the current DDBT of**  
15 **\$5.50/kW-month, making it difficult for a new resource to bid competitively and clear in the**  
16 **auction.** Further, no existing suppliers have submitted (or maintained) de-list bids in recent  
17 auctions indicating a capacity cost above the current DDBT. **Moreover, with the year-over-year**  
18 **increases in surplus conditions, it is likely that auction prices will continue to clear lower.**<sup>28</sup>  
19 This is reflected in the drop in clearing price from \$7.03/kW-month in FCA 10 to \$5.297/kW-  
20 month in FCA 11 for a majority of zones—a price that is already below the current DDBT. With  
21 an even greater surplus projected for FCA 12<sup>29</sup> [actual FCA 12 clearing price = \$4.63] **and no**  
22 **current indication that these supply and demand dynamics will change for future auctions,** it is  
23 important that the DDBT be lowered to ensure that the mechanisms in place to protect against  
24 uncompetitive clearing in the auction function properly.<sup>30</sup> "[Original footnotes omitted.  
25 **Emphasis added]**

<sup>5</sup> The DDBT serves to ensure that suppliers with actual "going forward" costs that are relatively low are not artificially precluded from lowering their supply offer price to a competitive level.

<sup>6</sup> RMF-3 at page 3.

<sup>7</sup> Exhibit RMF-3, Transmittal letter at page 3: "While the Tariff requires the ISO to update the DDBT once every three years, the ISO has committed to recalculate the DDBT for FCA 15 to reflect the change in the Capacity Performance Payment Rate from \$3,500/kW-month to \$5,455/kW-month, which will be in place starting with FCA 15."

1 **Q. How does this information relate to the possible participation of Invenergy's second**  
2 **turbine in FCA 13?**

3 A. It illustrates that regardless of whether or not Invenergy is able to participate in FCA 13  
4 for its second turbine, it is unlikely it would clear the auction and thus is not needed for New  
5 England electric reliability purposes.

6 **Q. Do you know if turbine two is likely to be available to participate in FCA 13?**

7 A. I don't know. It would depend on ISO NE's assessment of how Invenergy's second  
8 turbine would be poised to meet Critical Path Scheduling tariff requirements, as assessed by  
9 ISO NE during 2018 and preceding the February 2019 FCA 13. But it doesn't matter – it would  
10 very likely not clear in that auction if it were able to participate, just as it wouldn't have cleared  
11 in FCA 12 if it had been able to participate.

12 **Q. Why is it unlikely that it wouldn't be able to clear in FCA 13 even if it was able to**  
13 **qualify for participation?**

14 A. Because, as noted in ISO NE's DDBT filing, there is "no current indication that these  
15 supply and demand dynamics will change for future auctions".

16 **Q. Is there additional evidence available to support ISO NE's January 8, 2018 DDBT filing**  
17 **letter, particularly concerning "supply and demand dynamics"?**

18 A. Yes. Preliminary data from ISO NE is now available that further supports the core of the  
19 DDBT filing that suggests continuing surplus capacity conditions in New England.

20 **Q. What are those preliminary data?**

21 A. The ISO NE's preliminary CELT forecast data for 2018 are now available. Those data



1 indicate that forecast peak gross and net loads in the region will be lower than forecast peak  
2 gross and net loads seen in the 2017 CELT forecasts; as my prior testimony indicated, earlier  
3 CELT forecast vintages had higher peak forecasts than that seen in the 2017 CELT. Thus, the  
4 patterns I pointed out in earlier testimony continue. I include the preliminary findings of ISO NE  
5 as Exhibit RMF-4.

6 **Q. Can you summarize what is in those preliminary 2018 CELT findings?**

7 A. Yes. Figure 1 below presents two tables taken directly from ISO NE's February 7, 2018  
8 presentation, "Final Draft 2018 Annual Energy Forecast & Draft 2018 Summer Peak Forecast for  
9 Region and States", which is included in full as Exhibit RMF-4. The tables first show how ISO  
10 NE's forecast of "gross" summer peak demand has changed from last year's 2017 CELT forecast.  
11 It shows a reduction in annual gross peak load of 394 MW (for the forecast year 2018) to as  
12 much as 863 MW (for the forecast year 2026) compared to last year's forecast. The second  
13 table shows an estimate of the net peak load forecast, using last year's values to net out the  
14 effect of energy efficiency (EE) and behind-the-meter solar PV (BTM PV). As seen, it shows  
15 continuing declines in the net load forecast over the next decade.

16

1 **Figure 1. Slides From ISO NE 2/7/2018 Presentation on 2018 Draft Load Forecast**

2 *Gross Summer Peak Demand Forecast, New England 50/50 Peak*

	<b>Fcst_18 MW</b>	<b>CELT 2017 MW</b>	<b>Change MW</b>	<b>% Change</b>
<b>2019</b>	29,298	29,753	-455	-1.5%
<b>2020</b>	29,504	30,039	-535	-1.8%
<b>2021</b>	29,744	30,327	-583	-1.9%
<b>2022</b>	29,994	30,623	-629	-2.1%
<b>2023</b>	30,245	30,923	-678	-2.2%
<b>2024</b>	30,486	31,223	-737	-2.4%
<b>2025</b>	30,721	31,521	-800	-2.5%
<b>2026</b>	30,957	31,820	-863	-2.7%
<b>2027</b>	31,192			

3 Source: ISO NE 2/7/2018 presentation, slide 21.

4 *Summer Peak Demand Forecast, New England Gross and Net*

<b>Year</b>	<b>Gross 50/50</b>	<b>Gross 90/10</b>	<b>BTM PV*</b>	<b>PDR *</b>	<b>Net 50/50</b>	<b>Net 90/10</b>
<b>2019</b>	29,298	31,716	783	2,561	25,954	28,372
<b>2020</b>	29,504	31,950	848	2,893	25,763	28,209
<b>2021</b>	29,744	32,217	891	3,223	25,630	28,103
<b>2022</b>	29,994	32,494	929	3,527	25,538	28,038
<b>2023</b>	30,245	32,773	963	3,805	25,477	28,005
<b>2024</b>	30,486	33,041	992	4,055	25,439	27,994
<b>2025</b>	30,721	33,303	1,014	4,278	25,429	28,011
<b>2026</b>	30,957	33,566	1,035	4,475	25,447	28,056
<b>2027</b>	31,192	33,829				
<b>CAGR</b>	0.79%	0.81%			-0.30%	-0.18%

5  
 6 \* 2017 EE and BTM PV forecast values used since 2018 draft EE and BTM PV forecasts are not yet developed

7 Source: ISO NE 2/7/2018 presentation, slide 22.

8 **Q. Will the final 2018 energy efficiency and behind-the-meter load forecast components**

9 **likely show even greater effects than the 2017 “placeholders” seen in the second table on**

1 **your Figure 1 above?**

2 A. Yes. While the EE and BTM PV final forecasts will not be available until the 2018 CELT is  
 3 published on May 1, 2018, draft EE and PV forecasts are available now. I summarize those in  
 4 Table 1 below.

5 **Table 1. Preliminary Estimate of 2018 CELT 50/50 Summer Peak Net Load Forecast Components**

Forecast Year	Gross Peak Load (MW)	BTM PV (MW)	PDR (MW)	Net Peak Load (MW)	To Compare: 2017 CELT Net Peak Load
<b>2018</b>	29,060	642	2,780	25,637	26,458
<b>2019</b>	29,298	734	3,112	25,453	26,409
<b>2020</b>	29,504	825	3,351	25,328	26,298
<b>2021</b>	29,744	910	3,713	25,120	26,213
<b>2022</b>	29,994	994	3,999	25,001	26,167
<b>2023</b>	30,245	1,073	4,244	24,928	26,155
<b>2024</b>	30,486	1,152	4,565	24,769	26,176
<b>2025</b>	30,721	1,211	4,743	24,766	26,229
<b>2026</b>	30,957	1,270	4,937	24,750	26,310
<b>2027</b>	31,192	1,327	5,197	24,668	

6 Source: Synapse tabulation, based on ISO NE preliminary data on 2018 BTM PV and Energy Efficiency, available at  
 7 [https://www.iso-ne.com/static-assets/documents/2018/02/dgfwg\\_2018feb12\\_draft2018forecast\\_final.pdf](https://www.iso-ne.com/static-assets/documents/2018/02/dgfwg_2018feb12_draft2018forecast_final.pdf) and  
 8 [https://www.iso-ne.com/static-assets/documents/2018/02/eef2018\\_draft\\_fcst\\_v3.pdf](https://www.iso-ne.com/static-assets/documents/2018/02/eef2018_draft_fcst_v3.pdf).

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10 **Q. What do the data in Table 1 indicate?**

11 A. The data show that the summer net peak load forecast for near future years, as will be  
 12 available in the May 1, 2018 CELT, will be on the order of 1,000 MW lower than the forecast  
 13 available in May of 2017. Later years of the period show an even greater differential – more  
 14 than 1,500 MW lower by 2026. This effect results from the combination of modified gross load  
 15 forecasts, greater levels of BTM solar PV (especially in the later years), and continuing increases

1 in the amount of peak load savings through energy efficiency – all relative to last years'  
2 forecast. The trends I pointed out in my earlier testimonies in both this docket, in August of  
3 2017, and in the RI PUC advisory opinion docket in June of 2016, continue: successive year  
4 forecast vintages show lower summer peak loading for any given future year, thus lessening the  
5 capacity requirements on the ISO NE system – leading to the surplus capacity environment New  
6 England is in now, as directly stated by ISO NE in its FCA 12 results press release and the DDBT  
7 filing.

8 **Q. How do these trends result in a lowering of capacity requirements?**

9 A. Capacity requirements in ISO NE's FCM auctions are represented by the Net Installed  
10 Capacity Requirement (NICR). The NICR has been declining in each of the past three auctions  
11 relative to the prior auction, even though each subsequent auction is for a commitment period  
12 one year later than the previous years' auction.<sup>8</sup> While the NICR has not yet been established  
13 for FCA 13, it will be significantly informed by the 2018 CELT peak load forecast for 2022, which  
14 is more than 1,100 MW lower (preliminary data, net peak) than what was forecast last year.

15 **Q. How is this related to the question of whether or not the second turbine at  
16 Invenergy's proposed plant becomes available for FCA 13?**

17 A. It is relevant because it indicates that even under scenarios where the turbine does  
18 qualify, it likely would not clear, as it is not needed for reliability purposes for New England.

19 **Q. Does it also provide additional information on whether or not the first turbine of**

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<sup>8</sup> The NICR for the auction just completed (FCA 12, 2021/22) was 33,725 MW (see Exhibit RMF-2); a surplus of 1,103 MW was procured above that NICR. The NICR for FCA 11 (2020/21) was 34,075 MW. The NICR for FCA 10 (2019/20) was 34,151 MW. The NICR for FCA 9 (2018/19) was 34,189 MW.

1 **Invenergy's proposed plant, which cleared ISO NE's FCA 10 auction but will not be available**  
2 **for the CCP 10 delivery year (commencing June 2019), is needed for reliability in New**  
3 **England?**

4 A. Yes. It provides ongoing evidence of the lack of any need for the first turbine to be  
5 available in any year over the next decade.

6 To be clear: in my previous PUC testimony (June 2016) and EFSB testimony (August  
7 2017) I testified that there was no short-term, medium-term, or long-term reliability need for  
8 either of Invenergy's two turbines in New England. The ISO's recent action to disqualify  
9 Invenergy's Turbine Two from participation in FCA-12, taken together with the other data I  
10 discuss above, provide new evidence of those facts. There is no short-, medium-, or long-term  
11 need for either of Invenergy's two turbines.

12 **Q. Are there additional factors that would also continue to lessen or eliminate a**  
13 **reliability need for the Invenergy proposal (either turbine) for the next decade?**

14 A. Yes. The information I present in Figure 1 and Table 1 excludes any effect associated  
15 with ongoing policy directions in New England that seek to obtain additional large-scale clean  
16 energy such as that offered from Canada, and ongoing development in potential procurement  
17 of offshore wind energy in Massachusetts, Connecticut and Rhode Island.<sup>9</sup> These clean energy

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<sup>9</sup> Massachusetts solicitations for Clean Energy and Offshore wind under Sections 83D and 83C (respectively) of an "Act to Promote Energy Diversity"; current information available at <https://macleanenergy.com/>. Contract approval processes before the Massachusetts Department of Public Utilities will commence during 2018, in response to already-completed solicitations and supply offerings. Connecticut released an RFP for clean energy resources that includes up to roughly 200 MW of offshore wind (annual limit: 825,000 MW); information on the RFP available at [https://pierceatwoodwhatsup.com/26/369/uploads/ct-rfp-\(w6550103.pdf-1\).pdf](https://pierceatwoodwhatsup.com/26/369/uploads/ct-rfp-(w6550103.pdf-1).pdf). The Rhode Island Office of Energy Resources is planning to release an RFP in 2018 calling for up to 400 MW of clean energy resources, which could include offshore wind energy and other renewable energy.

1 initiatives fully exclude any natural-gas fired combined cycle technology. As those solicitations  
2 arising from policy developments come to fruition, significant amounts of clean energy from  
3 larger solar, wind, hydro and other renewable resources will continue to be available to  
4 supplement the energy efficiency and small BTM solar PV resources I've highlighted in this  
5 testimony.

6 **Q. Does that complete your testimony?**

7 **A. Yes.**

8 **Attachments to Testimony**

- 9
- 10 1. RMF-1 ISO NE Letter – Disqualification of Second Turbine from FCA 12
  - 11 2. RMF-2 ISO NE FCA 12 Results Press Release
  - 12 3. RMF-3 ISO NE DDBT Filing
  - 13 4. RMF-4 ISO NE Final Draft 2018 Annual Energy Forecast & Draft 2018 Summer Peak
  - 14 Forecast for Region and States
-