



Connecticut Department of Energy and Environmental Protection



Resource Assessment and Determination
Pursuant to
Executive Order 59/
June Special Session Public Act 17-3
SIPRAC Presentation

Department of Energy and Environmental Protection and
Public Utility Regulatory Authority

February 8, 2018



EO 59 and June Special Session Public Act 17-3

- The Order and legislations required DEEP and PURA to conduct an appraisal of nuclear power generating facilities
- DEEP and PURA were required to make determination of whether to conduct a procurement for nuclear power generating facilities and other zero carbon resources
- The final assessment was completed on February 1, 2017



Process



- On August 2nd DEEP and PURA opened dockets
- DEEP and PURA retained the consultant services of Levitan & Associates, Inc. (LAI) to model and analyze Millstone's economic viability
- On December 14, 2017 DEEP and PURA issued a Draft Report
- DEEP and PURA held two public meetings and received 553 public comments on the findings in the Draft Report
- DEEP and PURA issued a Draft Resource Assessment and Determination issued on January 22, 2018
- DEEP and PURA received further comments on the draft and issued the Final Resource Assessment and Determination on February 1, 2018.



Information Requests to Dominion



- On August 15, 2017 DEEP and PURA issued thirty data requests to Dominion aimed at understanding the going forward costs and risks to the Millstone Station.
- Dominion provided responses on September 1st and 19th, providing public information and declining to provide “commercially sensitive information.”
- On November 30, 2017 Dominion submitted a two-page document with high-level financial projections of costs and revenues for Millstone for the period 2017-2022.
- On January 10, 2018, Dominion submitted a more detailed document with forward looking financial projections.
- Dominion did not provide audited financial data regarding verifiable projected costs and expected revenues of Millstone.



Structure of Report

The Report provides:

1. Background on nuclear generation, the New England electricity sector, and Connecticut's relevant environmental and energy public policies;
2. Market trends in the ISO New England region;
3. A summary of the results from the LAI assessment of economic and emission implications;
4. A discussion of policy options going forward; and
5. Final Determination and Recommendation.

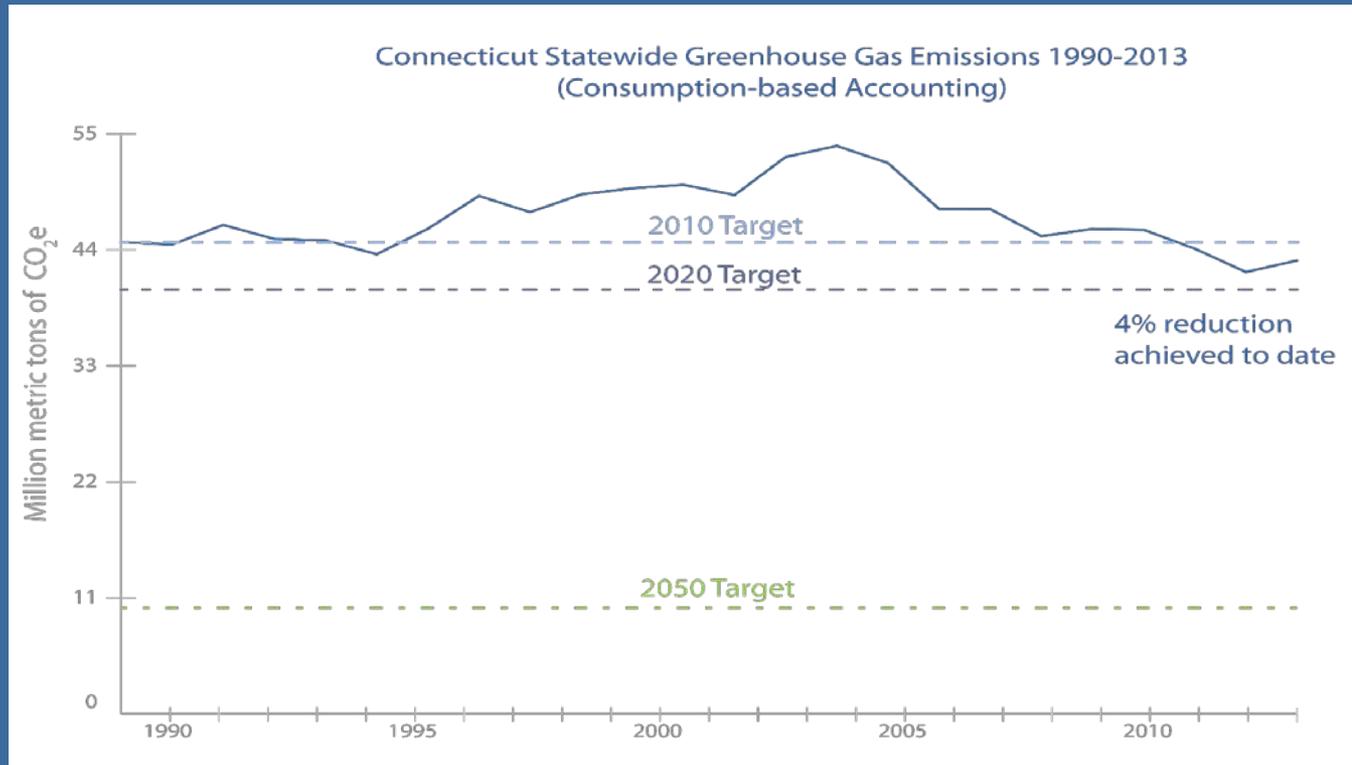


Background

- Connecticut restructured its electric market in 1998 through Public Act 98-28.
- In August 2000, Dominion Resources purchased Millstone for approximately \$1.3 billion from CL&P.
- Ratepayers paid an additional \$2.1 billion to UI CL&P for the stranded costs incurred by the utilities.
- Dominion has invested an additional \$1.1 billion of capital since acquiring the station.



Connecticut GHG Reduction Targets

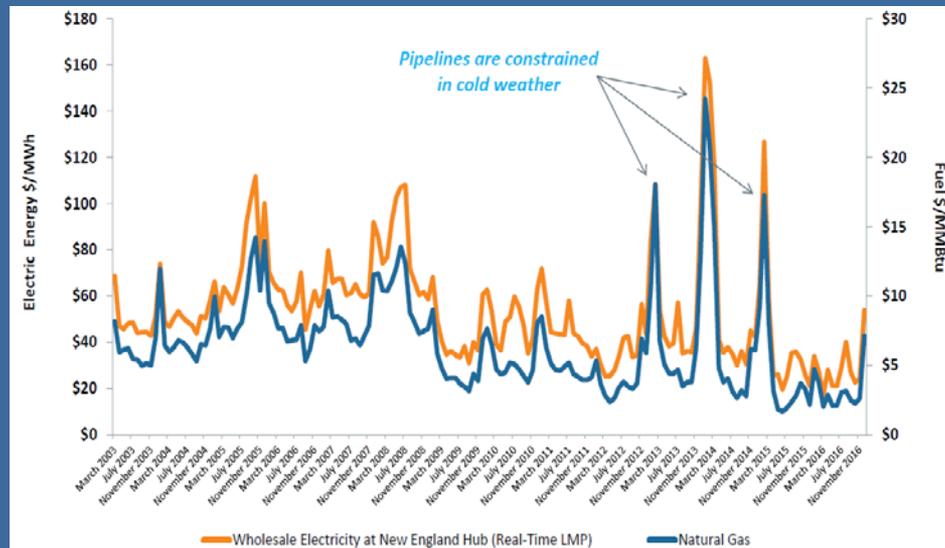


- Global Warming Solutions Act (GWSA) sets mandatory economy-wide GHG emissions reduction targets of 10% below 1990 levels by 2020 and 80% below 2001 levels by 2050
- Zero-carbon nuclear power is critical to meeting Connecticut's targets.



Wholesale Energy Markets

Monthly Average Natural Gas and Wholesale Electricity Prices in New England



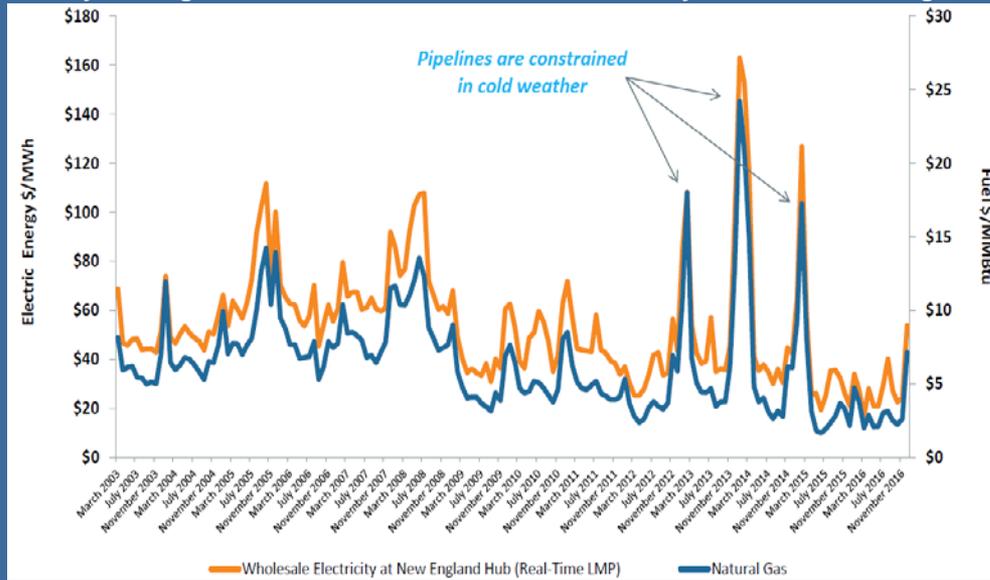
Source: ISO-New England Regional Electricity Outlook, 2017

- The wholesale electricity markets are designed to procure resources that are least cost without giving undue preference to any particular technology.
- Natural gas fired generation has become the most prevalent source of energy setting the price of electricity 75% of the time
- In a deregulated market, it is up to each merchant generator to determine what return on investment is necessary to justify the continued operation of their generation assets.



Energy Market Revenues Key to Nuclear Generation

Monthly Average Natural Gas and Wholesale Electricity Prices in New England



Source: ISO-New England Regional Electricity Outlook, 2017

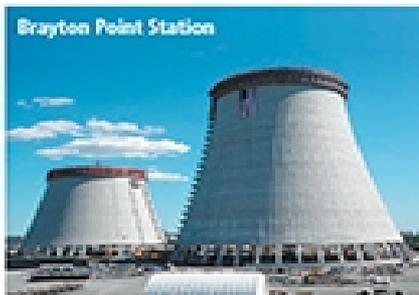
- Nuclear units are “infra-marginal” units, which means that their marginal costs are lower than the hour price of the energy market.
- Many of other older existing plants have the opposite situation with low fixed costs and high marginal costs.
- Nuclear units are highly sensitive to energy prices.
- The low price of natural gas is keeping energy prices low, while constraints on gas create volatility that neither Millstone nor customers like.



Retirement Options

- A retirement decision is made about four years in advance through the Forward Capacity Market
- Millstone has already cleared in FCA 9 (2018-2019), FCA 10 (2019-2020), FCA 11 (2020-2021), and FCA 12 (2021-2022).
- If Millstone were to decide to retire, under current rules, the ISO would not find that there is a reliability problem.
- Once Millstone submits a decision to retire, under current rules, there is very limited options for the State to take them off the retirement path.

Major New England retired/retiring power plants



Facility	Location	Size	Fuel
Brayton Point Station	Somerset, Mass.	1,535 MW	Coal & oil
Salem Harbor Station	Salem, Mass.	749 MW	Coal & oil
Pilgrim Nuclear Power Station	Plymouth, Mass.	677 MW	Nuclear
Vermont Yankee Station	Vernon, Vt.	604 MW	Nuclear
Norwalk Harbor Station	Norwalk, Conn.	342 MW	Oil
Mount Tom Station	Holyoke, Mass.	143 MW	Coal

Source: ISO New England



Levitan & Associates, Inc. Findings

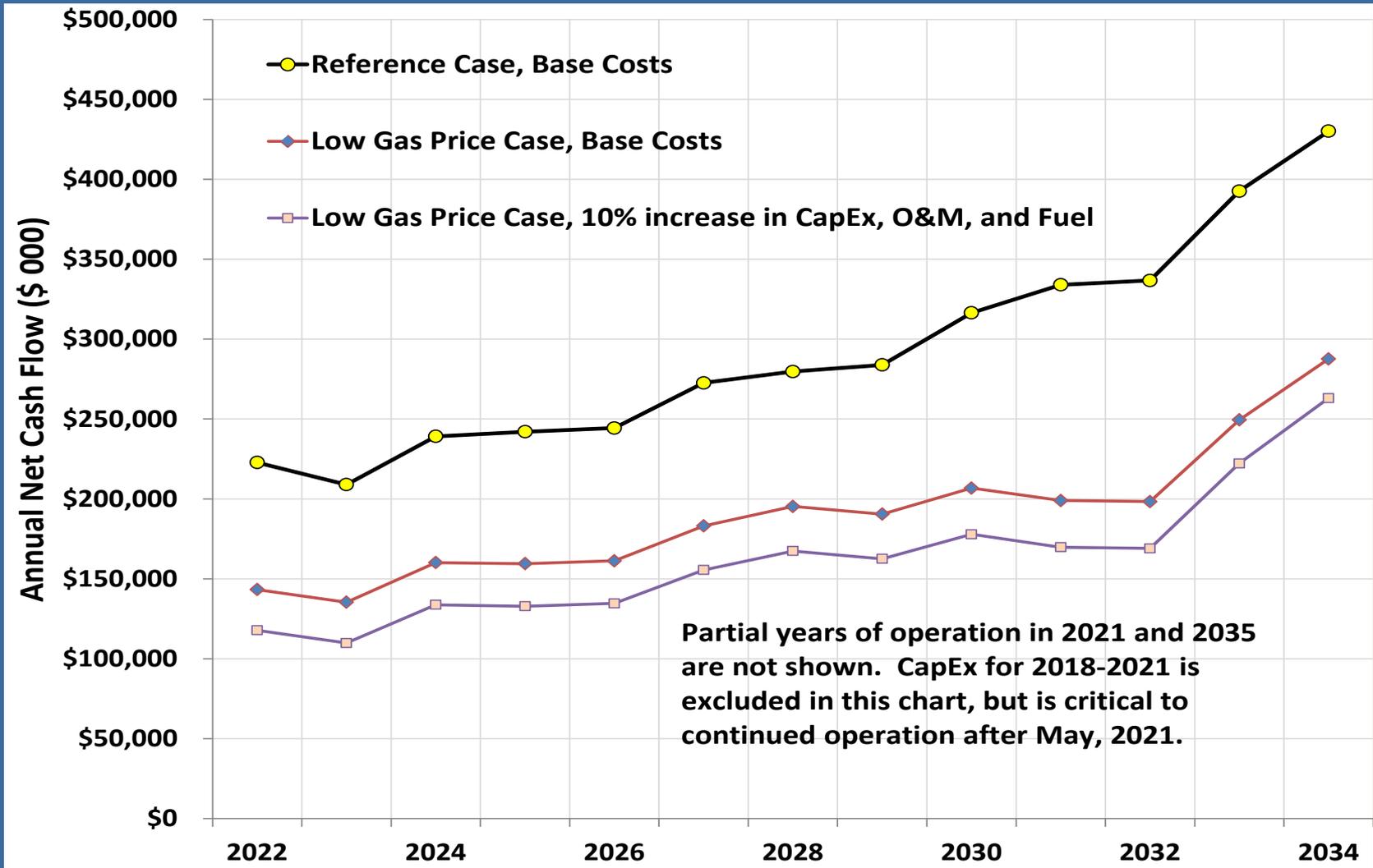
Financial Condition of Millstone

- Levitan & Associates, Inc. (LAI) performed detailed simulation modeling of the New England wholesale energy market under several scenarios.
 - Reference case
 - Continued investment in energy efficiency, RGGI continues to tighten cap, Massachusetts procurements assumed, CT RPS expanded to 30% by 2030.
 - High and Low natural gas prices,
 - High clean energy build-out
- Without access to the books, LAI built up unit specific costs and operating information using public records.



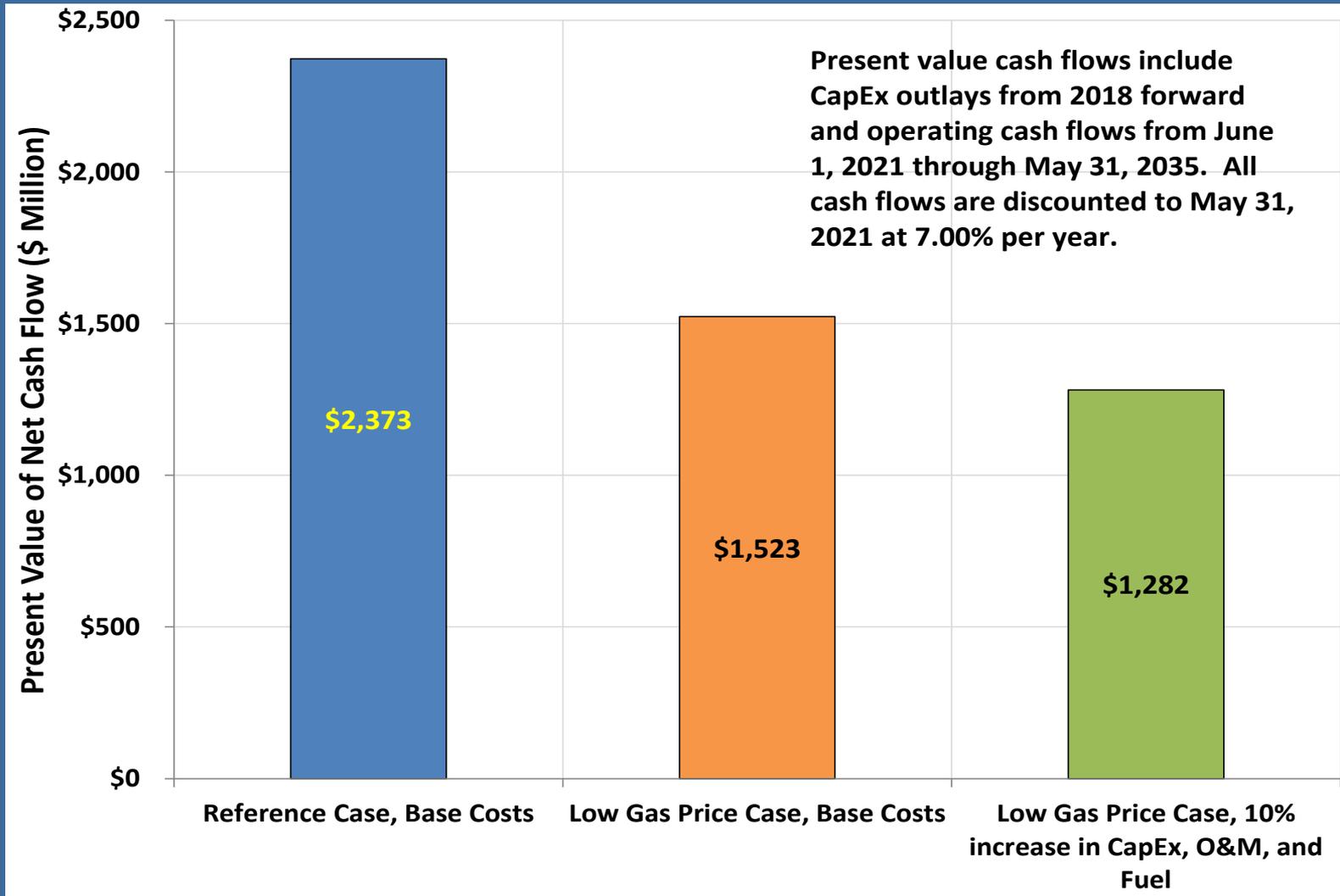
Levitan & Associates, Inc. Findings

Financial Condition of Millstone



Levitan & Associates, Inc. Findings

Financial Condition of Millstone



Millstone Late Filing

- Although received very late in this proceeding, and in considering comments on the Draft Report, DEEP and PURA evaluated the Dominion submission by conducting a series of high-level sensitivity scenarios, in which the LAI cost assumptions were adjusted using the alternative cost proxies, and in which rough assumptions on the impact of the recent federal tax law changes were applied.
- These sensitivity scenarios suggested that, if accurate, the cost assumptions asserted in Dominion and others' comments could have a significant impact on Millstone Station's profitability, such that the financial viability of Millstone's continued operation could be at risk.
- More detailed and auditable financial data is necessary to verify the accuracy of actual costs to warrant concluding the Millstone Units are at risk.



Levitan & Associates, Inc. Findings

Replacement Scenarios

LAI reviewed three hypothetical scenarios to replace Millstone if it were to retire:

1. The New England wholesale market would compensate for the loss of Millstone with the addition of new merchant gas-fired capacity (“0% Replacement Case”);
2. EDCs contract for renewable energy and demand side management resources to compensate for a 1/4 of the lost Millstone energy (“25% Replacement Case”) (Connecticut’s approximate load share of Millstone); and,
3. EDCs contract for renewable energy and demand side management resources to compensate for the full output of the lost Millstone energy (“100% Replacement Case”).



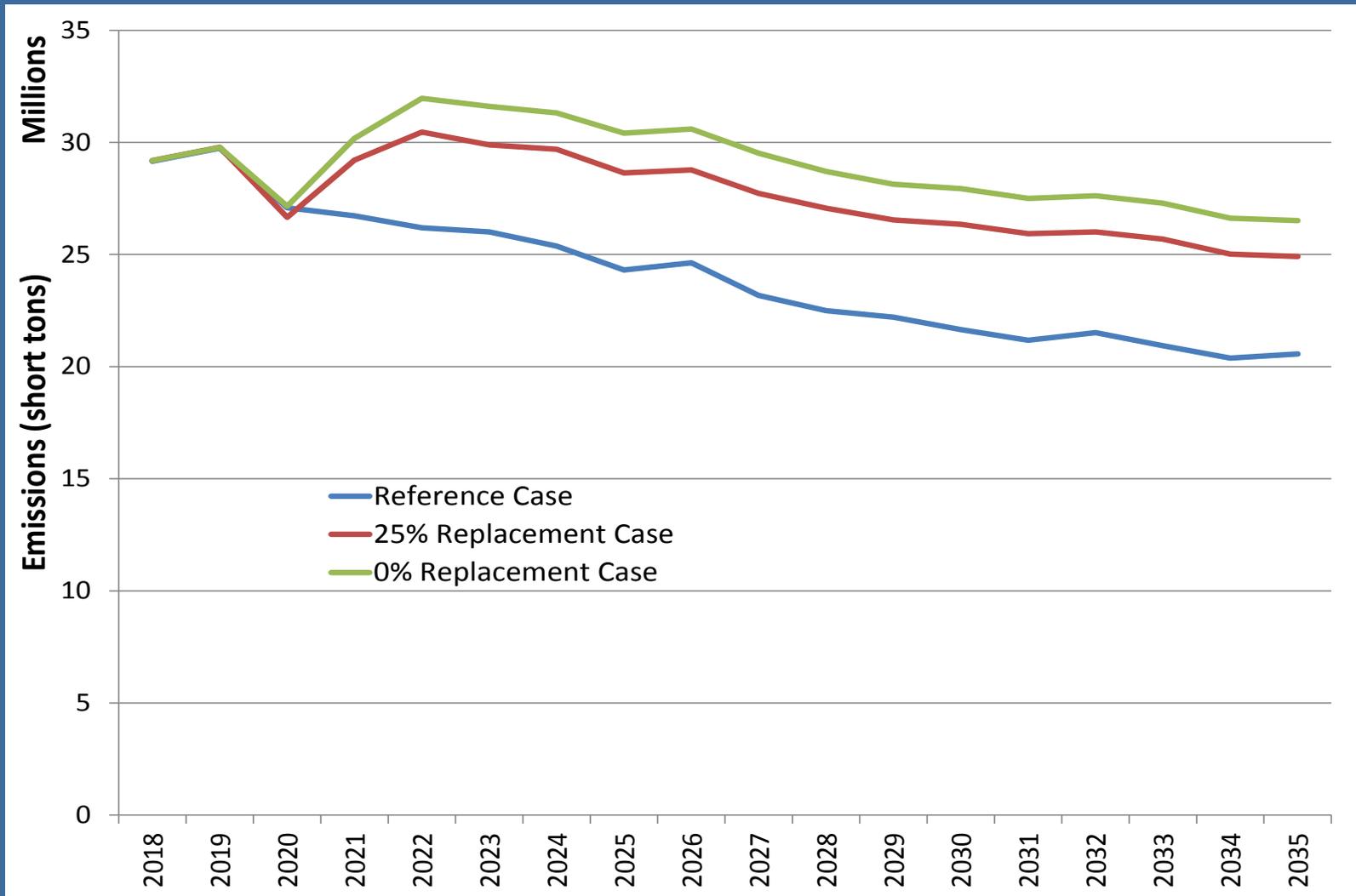
Levitan & Associates, Inc. Findings

Financial Condition of Millstone

- 25% Replacement Case:
 - 1,206 MW of Connecticut Utility-Scale Solar
 - 339 MW of Energy Efficiency and Passive Demand Response
 - Increase in reliance on natural gas generation
- 100% Replacement Case:
 - 1000 MW of imported clean energy
 - 2412 MW of Connecticut Utility Scale Solar
 - 677 MW of Energy Efficiency and Passive Demand Response
 - 372 MW of off-shore wind
- 0% Replacement Case
 - Significant increase in reliance on natural gas generation
- None of the study cases considered the feasibility of siting or constructing the replacement technologies.

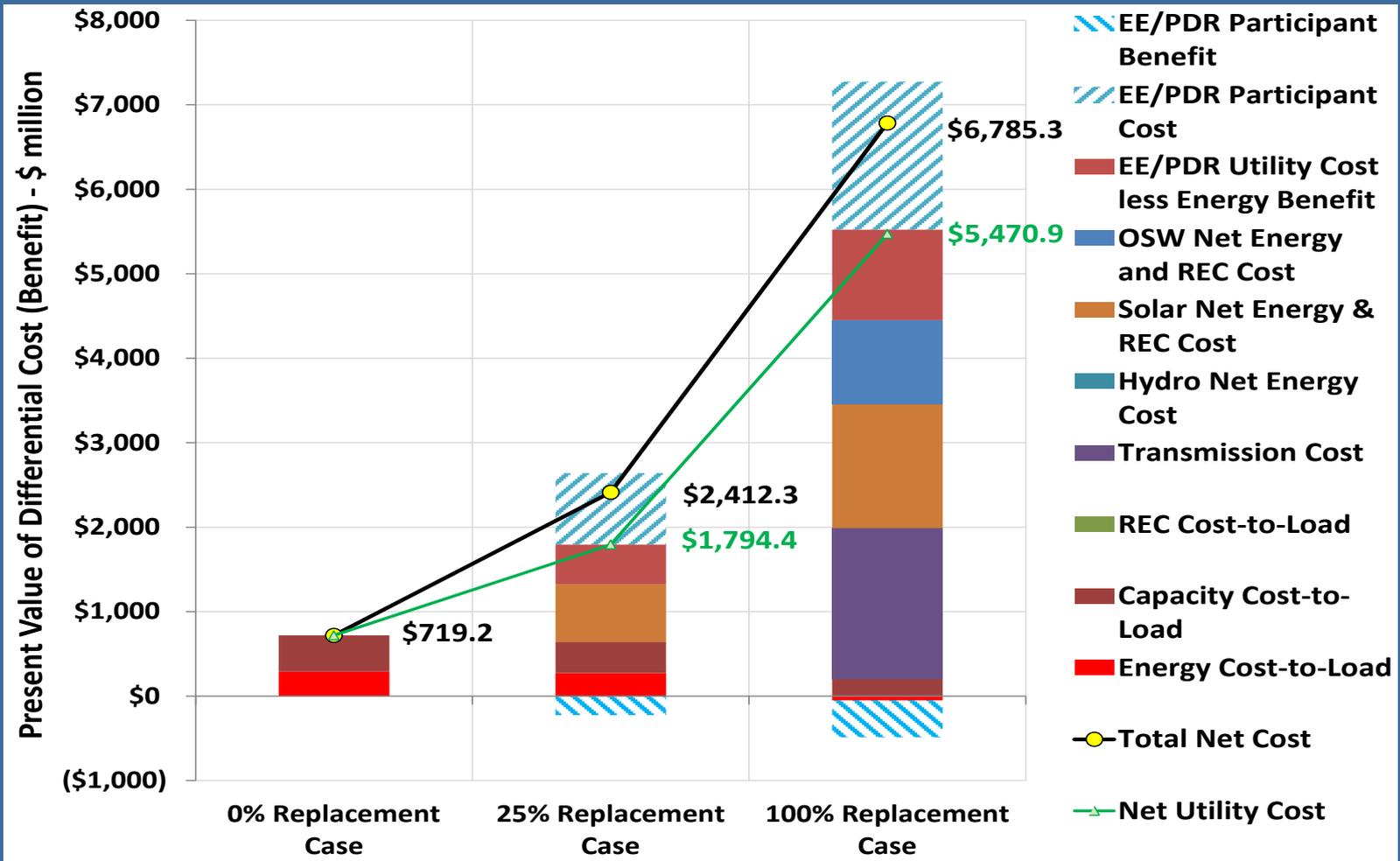


Levitan & Associates, Inc. Findings CO2 Scenario Emissions



Levitan & Associates, Inc. Findings

Financial Condition of Millstone



Economic Benefits of Millstone



- LAI found that continued operation of Millstone creates in-state annual outputs of \$350.7 million (2017 dollars) through 2032 before tapering down for a total present value of \$4.2 billion from 2018 to 2040.
- An analysis by the NEI states that Millstone provides economic benefits of about \$1.3 billion in Connecticut and another \$1.3 billion to the rest of New England.
- Millstone employs approximately 1100 workers (average salary about \$167,000) and around 400 more contractors in one capacity or another.
- CHMURA Economics & Analytics Report found that direct and secondary employment amounted to 3,900 jobs



Policy Options

- DEEP and PURA briefly discuss a few mechanisms available to ensure important policy resources are built and retained:
 - Purchase Power Agreement (PPA)
 - Zero-emission Energy Credit (ZEC)
 - Multi-state options
 - PPA
 - ZEC
 - Carbon Adder within New England only (in addition to RGGI)
 - Dynamic Forward Clean Energy Market



Determination

- Under the initial LAI analysis, the Millstone Nuclear Units are profitable under expected market revenues through 2035.
- The finding that the Millstone Nuclear Units are viable and/or unlikely to retire is uncertain.
- The Millstone nuclear units provide significant value to Connecticut and to the entire New England region.
- Additional or new zero emission generating resources provide value to Connecticut and the New England region.
- Existing zero emission electricity generating resources provide benefits to Connecticut.
- The competitive solicitation process under June Special Session Public Act 17-3 is a reasonable mechanism through which to determine if it is in the interest of ratepayers to secure the value offered by new and existing zero emission resources.



Procurement

DEEP will conduct a procurement or procurements for new and existing zero carbon generation facilities, according to the following conditions:

- New Resources will be scored based on both price and non-price criteria, as is typical with other DEEP resource procurements.
- Existing Resources which are not newly delivered to the ISO New England, are eligible to bid into the procurement.
 - Existing resources are assumed to be part of “reference” set of generation resources; their bids will only be scored based on price only and not on non-price benefits.
- Existing Resources Confirmed at Risk may elect to provide to DEEP and PURA credible evidence, such as audited financials, sufficient to support a finding that the resource will likely retire without ratepayer support, then the resource may be deemed an “existing resource confirmed at risk.”
 - Existing resources confirmed at risk are not assumed to be part of “reference” set of generation resources and will be scored based on price and non-price benefits.

