2014 Annual Town Meeting
Article 37
April 16, 2014

ARTICLE 37. To see if the Town will vote to adopt proposed new sustainable energy goals pursuant to ARTICLE 12. SUSTAINABLE ENERGY COMMITTEE, Section 12.3 General Duties.; or to take any other action relative thereto.

Katy Gibson, Precinct E, Member of the Sustainable Energy Committee, offered the following motion, which was

VOTED, unanimously, that this Town Meeting hereby adopts the target proposed by the Sustainable Energy Committee to reduce the Town's greenhouse gas emissions (public and private) 25% below 2007 levels by the year 2020.

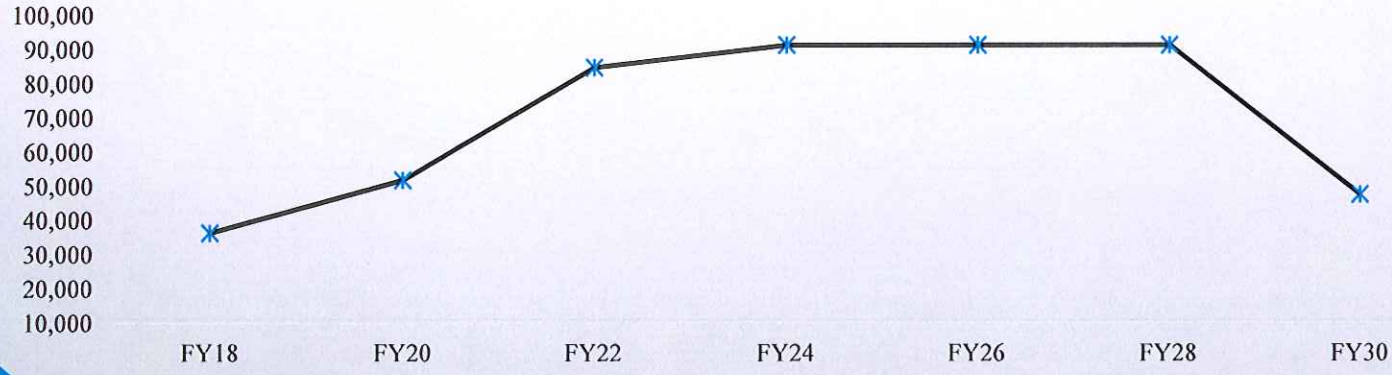
5 Primary Factors Contributing to Electricity Sector's GHG Reduction

Municipal Light Plant's GHG Reduction

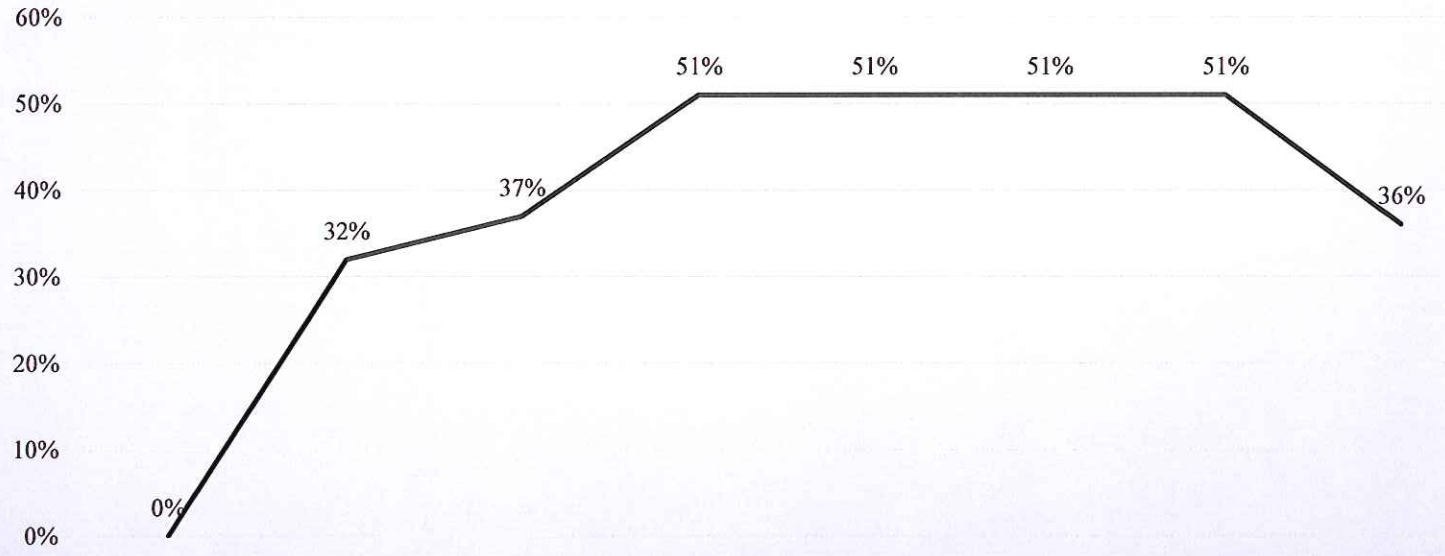
- Megawatt-hour sales reduction
- Addition of renewable generation
- Addition of in-Town solar
- Addition of nuclear power
- ISO-New England GHG reductions

WELLESLEY MUNICIPAL LIGHT PLANT
Non Fossil Fuel Generation 2018 – 2030
Megawatt Hours – Portfolio Percentage

Energy Resource	FY18	FY20	FY22	FY24	FY26	FY28	FY30
New York Hydro	10,692	10,692	10,692	10,692	10,692	10,692	10,692
Brown Bear Hydro	6,644	6,644	6,644	6,644	6,644	6,644	6,644
Spruce Mountain	7,699	7,699	7,699	7,699	7,699	7,699	7,699
Saddleback Ridge	6,753	6,753	6,753	6,753	6,753	6,753	6,753
Canton Wind	3,746	5,543	5,543	5,543	5,543	5,543	5,543
Granite State Wind	0	7,884	7,884	7,884	7,884	7,884	7,884
In-Town Solar	919	2,334	2,334	2,334	2,334	2,334	2,334
NextEra Seabrook	0	4,344	37,230	43,800	43,800	43,800	0
Total	**36,453**	**51,893**	**84,779**	**91,349**	**91,349**	**91,349**	**47,549**
FY18 % Portfolio	16%	23%	37%	40%	40%	40%	21%



WELLESLEY MUNICIPAL LIGHT PLANT POWER SUPPLY PORTFOLIO
All Greenhouse Gas Emission Reduction 2007 - 2030



All Renewables	FY07	FY18	FY20	FY22	FY24	FY26	FY28	FY30
GHG Emissions (sTons)	110,741	75,202	69,435	54,698	54,698	54,698	54,698	71,057
GHG Reduction	N/A	32%	37%	51%	51%	51%	51%	36%

WMLP

ANALYSIS GROUP EXPANSION OPTIONS

1. **EVALUATE REC PURCHASE SALE OPPORTUNITIES:**
   a. Retire all RECs within portfolio;
   b. Purchase additional RECs beyond portfolio from MLP revenues;
   c. Sell non-voluntary RECs and use proceeds for specific projects.

2. **INCREASE IN-TOWN SOLAR INSTALLATIONS:**
   a. Finalize 900 Worcester Street roof lease;
   b. Promote second Town-wide campaign;
      - First campaign, 78 installations/514 kilowatts; and
   c. Take maximum advantage of SMART program.

3. **EXPAND PARTICIPATION IN WIND PROJECTS:**
   a. Finalize Brookstone Energy's Granite Reliable Wind;
   b. Pursue on-shore wind projects at a reasonable price;
   c. Extend Spruce Mountain past 2026 expiration; and
   d. Participate in second off shore wind solicitation.

WMLP

ANALYSIS GROUP EXPANSION OPTIONS

4. **PURSUE HYDRO PURCHASES AND EXTENSION:**
   a. Finalize Hydro Quebec Master EEI Agreement;
   b. Extend New York Hydro past 2025 expiration;
   c. Extend Brown Bear Hydro past 2021 expiration; and
   d. Pursue Canadian Hydro (Maine transmission).

5. **EXPAND USE OF NUCLEAR POWER:**
   a. FY20 – 18% unhedged;
   b. FY21 – 39% unhedged; and
   c. FY22 – 52% unhedged.

6. **ENERGY CONSERVATION INITIATIVES:**
   a. Permanently adopt enhanced residential energy audits;
   b. Establish multi-family audit campaign with National Grid; and
   c. Develop and implement commercial incentives.

7. **OTHER GHG REDUCTION OPPORTUNITIES:**
   a. Collaborate with Wellesley College;
   b. Explore Town policy promoting electric heat;
   c. Establish incentive program for electric vehicles;
   d. Net zero support for HHU;
   e. Energy conservation and solar campaigns; and
   f. Fund major campaign with Sustainable Energy Committee.

Ad Hoc Committee

Paul L. Criswell

David A. T. Donohue

James R. Gorman

Ned Hall

Debra J. Healy

Richard F. Joyce

Robert D. Lamppa

Donald H. Newell

Laura S. Olton

John G. Tzimorangas

ANALYSIS GROUP
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

WMLP Greenhouse Gas Emissions Reduction Study

Presentation of Results

Prepared for: Wellesley Town Hall Public Forum

September 24, 2018

Agenda

ANALYSIS GROUP
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

Purpose and Scope of Analysis Group Study

Review of Analytic Method

Results and Observations

Goals for Today:

- Provide an overview of the work completed
- Discuss method, options, issues
- Answer questions

What the AG Study is, and is Not

ANALYSIS GROUP
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

- **Purpose – provide data/information on potential GHG reduction options in the *electric sector***
  - Electric sector analysis – not reviewing transportation, non-electric heating, etc.
  - Focus on data and analysis for town's review and consideration
- **Goal – identify range of potential electric sector GHG reductions and the expected cost of those reductions**
  - Input for the town and the Wellesley Municipal Light Plant (WMLP) in considering future electric sector emissions and potential changes to town-wide GHG reduction goals
- **Focus – near term measures that can reasonably be achieved under existing market structures and within WMLP operational control**
  - Also consider trade-offs and observations around two strategies: annual purchases of existing RECs, and long-term contracting or implementation of changes in supply and demand of electricity

Analytic Method

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- **Systematic review and quantification of viable potential GHG emission reduction strategies in four steps:**
  1. ***Identify*** CO_2 reduction opportunities (e.g., from REC purchases, renewable procurement, energy efficiency…)
  2. ***Assess*** the feasibility and cost of achieving such reductions, given publicly available data and pricing information
  3. ***Construct*** a "supply curve" of options available to WMLP that provides detail on each technology or strategy, the impact on WMLP's CO_2 profile, and the potential cost to WMLP customers
  4. ***Quantify*** potential GHG emission reductions and associated ***net*** costs for the milestone years 2020, 2025, 2030, with qualitative assessment of key issues and uncertainties
- **Outlines the cost effectiveness of achieving GHG reductions, considering the (a) cost of action, (b) wholesale and/or distribution cost savings, and (c) quantity of GHGs reduced**

Pathways

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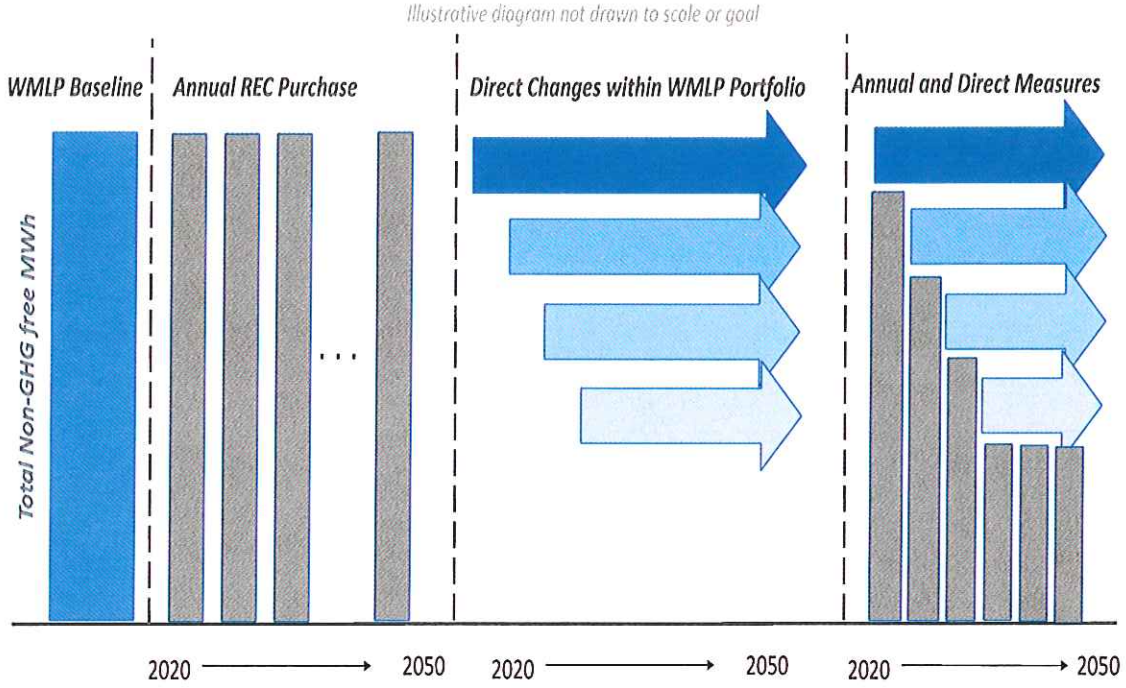
- **Two complementary pathways to decarbonization:**
  - Annual purchases of existing Renewable Energy Certificates (RECs)
  - Long-term strategies that affect changes in WMLP supply or demand



- **Long-term strategies:**
  - Energy Efficiency (C&I, residential, and behavioral)
  - New contracts with onshore wind, utility solar, and distributed solar; with market potential increasing each year
  - New contracts with one-time large scale infrastructure projects, including existing nuclear, new offshore wind, and new hydropower imports

Cumulative Reductions, Net Costs to 2030 ($2018)

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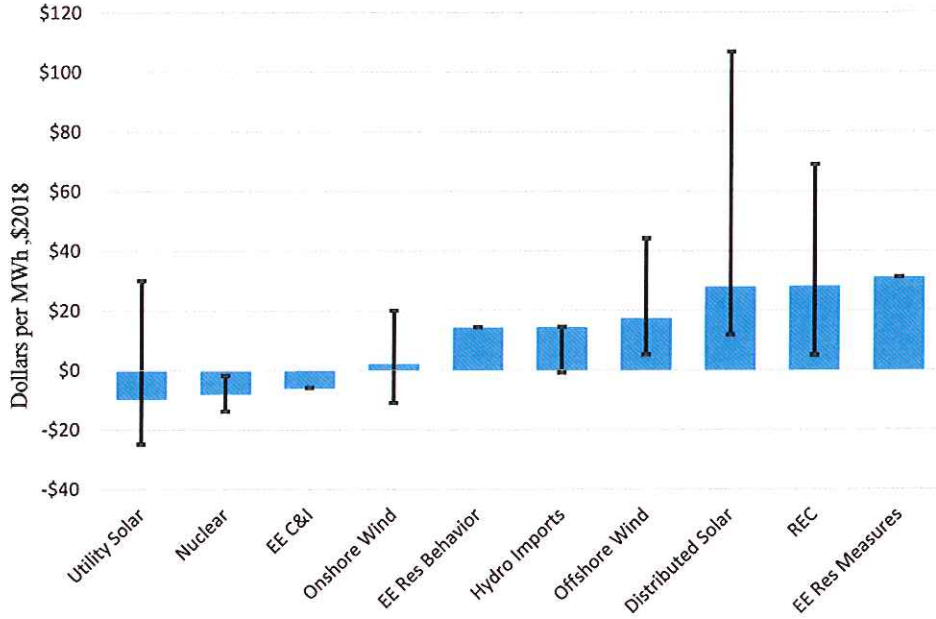
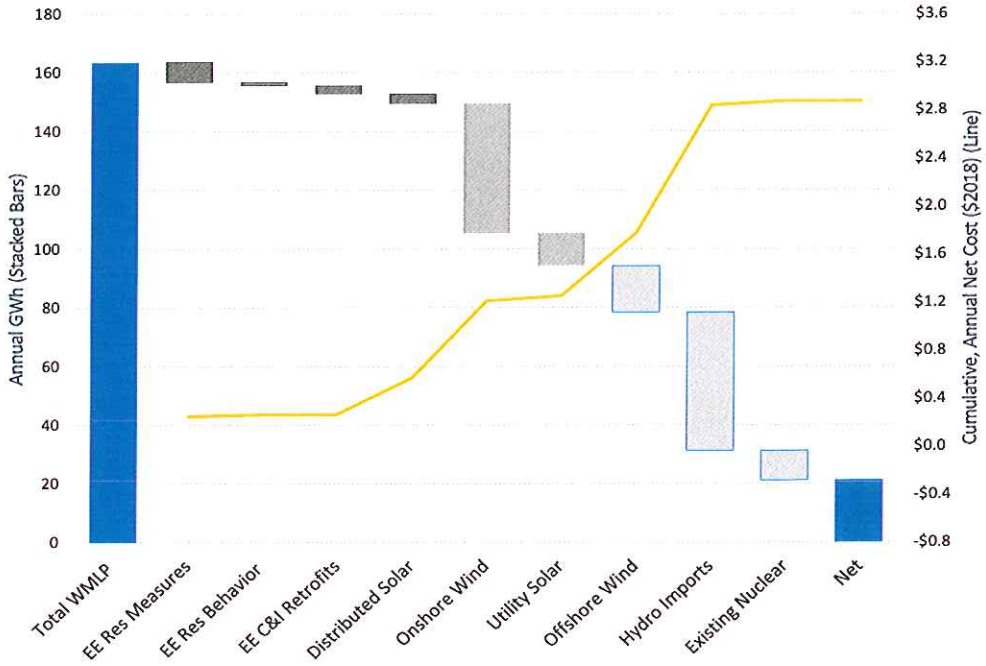
- **Procuring all long-term carbon-reduction measures – annualized net costs to WMLP ratepayers of $2.9 million to 2030 ($2018)**
  - Approximately $11.30 per month (8.3% increase)
  - Reduce the remaining non-GHG free portfolio by 87%
  - Purchasing (and retiring) additional RECs to meet a 100% goal increases costs to $3.5 million per year.
  - Using RECs alone to meet 100% goal costs $4.6 million per year (REC costs based on mid-price estimates of REC prices)





Observations

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- **Different "pathways" to GHG reductions present important tradeoffs between feasibility, certainty, and total cost**
  - In addition, future strategies to reduce GHG emissions may include electrification of the building and transportation sectors, which could increase load provided by WMLP
- **There are factors other than costs and availability to consider in developing GHG emission reduction pathways, such as market uncertainty and project prioritization**
  - For example, large infrastructure projects and one-time contracts with new hydropower imports, offshore wind, or existing nuclear generation account for more than 50 percent of identified GHG reduction potential
  - Annual purchases of RECs could provide important flexibility towards Town goals
  - There is value in prioritizing projects which are directly within the WMLP's control
- **Net costs depend on the pathway selected**
- **Net costs depend on the timing and implementation of the pathway selected**
- **An overreliance on any one strategy will tend to increase costs and risk to the WMLP**

Contact

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About Analysis Group

ANALYSIS GROUP
ECONOMIC, FINANCIAL and STRATEGY CONSULTANTS

- Largest privately held economic consulting firm in North America
- More than 35 years of experience providing economic and financial analysis and consulting services
- 13 offices in the U.S., Canada, Europe and China
- Global client base, including many of the nation's largest law firms, Fortune 500 companies, industry associations, and government agencies
- 900+ professionals, most with advanced degrees in economics, statistics, finance, accounting, or management
- Diverse experience in litigation support, expert witness work, business consulting, economic analysis, and regulatory strategy advice
- Network of authoritative academic experts at leading universities
- Diverse set of practice areas – securities, health care, finance, antitrust, M&A, IP, ***energy & environment***
- AG Team: Paul Hibbard (Principal; former Chair MA DPU); Craig Aubuchon