

**MINUTES OF THE
MUNICIPAL LIGHT BOARD
FEBRUARY 13, 2018**

PURSUANT TO notice given the Wellesley Municipal Light Board (“Board”) met at the Town Hall, 525 Washington Street at 7:00 PM.

PRESENT

Those present included Chair Paul L. Criswell and Commissioners, Katharine Gibson and Jeffrey P. Wechsler. Also in attendance were Municipal Light Plant (“MLP”) Director Richard F. Joyce and Assistant Directors Debra J. Healy and Donald H. Newell, Analysis Group Representatives Paul J. Hibbard and Craig Aubuchon and approximately fifty (50) public attendees.

PUBLIC FORUM

Mr. Criswell provided an overview of the Board’s goals for the retention of Analysis Group. The MLP has made considerable progress in achieving Town Meeting’s 25% greenhouse gas (“GHG”) emission reduction from 2007 to 2020. Analysis Group will be providing two formal reports that detail alternatives for a systematic reduction of GHG emissions and the methodology utilized to calculate the reduction and the costs the MLP can expect to incur from the implementation of each recommended strategy. The initial report will identify strategies and costs for the period 2018 through 2030. The second report will identify future opportunities that may be available for the period 2031 through 2050.

Mr. Hibbard provided attendees with a summary of his professional experience and an overview of the Analysis Group organization. Considerable progress has been made on the 2018 to 2030 study. If all goes accordingly the study will be presented to the Board at an open meeting in April. Mr. Hibbard’s presentation is attached.

Mr. Criswell opened the Forum for questions from 7:40 PM to 8:20 PM.

ADJOURNMENT

The Board Meeting adjourned at 8:20 PM.

Respectfully submitted,

Katharine Gibson, Secretary

WMLP Greenhouse Gas Emissions Reduction Study

Overview and Introduction

Prepared for: Wellesley Town Hall Public Forum
February 13, 2018

Agenda

Purpose and Context

Scope of Analysis Group Study

Greenhouse Gas Emission Reduction Measures

Method, Sources and Data

Schedule

Goals for Today:

- Provide an overview of the scope of work
- Discuss method, options, issues
- Answer questions
- Get your feedback

About Analysis Group




- 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
- 700+ 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

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AG Energy/Environment Focus Areas



Climate & Clean Energy	Energy/Emission Market Design	Regulatory Proceedings & Public Policy	Price/Rate Analysis & Design
<ul style="list-style-type: none"> ▪ Federal, regional, & state climate policies ▪ Environmental impact valuation ▪ Energy efficiency programs & policies ▪ Renewable portfolio standards 	<ul style="list-style-type: none"> ▪ Emissions trading & allowance markets ▪ Transmission policies & wholesale market rules ▪ RTO/ISO tariffs/practices ▪ Retail market rules ▪ Gas/electric market integration 	<ul style="list-style-type: none"> ▪ Rate case expert testimony ▪ Alternative regulation ▪ Siting/permitting ▪ Regulatory & business model strategies ▪ Economic studies 	<ul style="list-style-type: none"> ▪ Performance-based ratemaking ▪ Rate design ▪ Dynamic & time-differentiated pricing ▪ Price forecasts ▪ Production cost modeling
Market Analysis	Valuation & Litigation Support	Resource Planning & Procurement	Grid Modernization
<ul style="list-style-type: none"> ▪ Electric, gas, fuel, & environmental market analysis ▪ Market power studies ▪ Demand response ▪ Emerging technologies ▪ Regulatory risks & trends 	<ul style="list-style-type: none"> ▪ M&A ▪ Contract disputes ▪ Shareholder litigation ▪ Chapter 11 proceedings ▪ Class certification ▪ Damages ▪ Enforcement actions ▪ Price manipulation 	<ul style="list-style-type: none"> ▪ Design of resource procurements ▪ Resource planning studies/analyses ▪ Assessment of resource & project alternatives ▪ Comparison & benchmarking 	<ul style="list-style-type: none"> ▪ Business case analysis ▪ Value of uninterrupted service studies ▪ Standards development ▪ Grid flexibility & prices-to-devices approaches ▪ Innovation & technology commercialization

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What the AG Study is, and is Not



- **Wellesley goal – reduce GHG emissions from all sources by 25% from 2007 levels by 2020**
 - Current goals adopted in 2014, with comprehensive efforts led by Wellesley Sustainable Energy Committee
 - Town-wide, all sector goal
 - Wellesley could decide to seek additional reduction targets going forward
- **Purpose of AG study – provide data/information on potential GHG reduction options in the *electric sector***
 - Electric sector analysis – not reviewing transportation, non-electric heating, etc.
 - Focus is on providing data and analysis for town's review and consideration; will not identify or recommend specific goals
- **Study will help identify the 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
 - Will focus on options and technologies to reduce emissions, and potential costs

Purpose and Scope

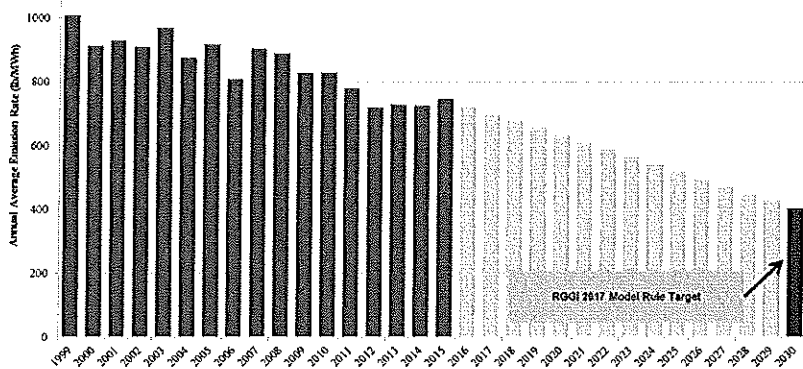


- **Conduct a systematic review and quantification of viable potential GHG emission reduction strategies for the WMLP, including GHG reduction potential and costs**
 - *Phase I:* Viable near-term measures/strategies for the period 2018 to 2030
 - *Phase II:* Viewpoint on industry trends and business model, with implications for potential GHG reduction strategies, beyond 2030
- **Project will focus on four steps:**
 1. **Identify** CO₂ 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, and
 3. **Construct** a "supply curve" of options available to WMLP that provides detail on each technology or strategy, the impact on WMLP's CO₂ profile, and the potential cost to WMLP customers
 4. **Quantify** potential GHG emission reductions and associated costs for the milestone years 2020, 2025, 2030, 2040 and 2050, with qualitative assessment of key issues and uncertainties

Backdrop: Power System Emissions



- State and regional programs will affect regional wholesale CO₂ emissions
 - RGGI
 - MA Global Warming Solution Act - DEP Rule 310 CMR 7.74 (MA power plant cap)
 - Long-term contracts
 - Regional investments in EE, RE (grid-connected & distributed)
 - ... all point to declining GHG emission intensity of power system



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Context: WMLP Actions



- WMLP actions exceed regional performance – emission reductions exceed regional average over past ten years (*ENE Portfolio Emission Report, 2017*)
- Going-forward GHG reductions: supply-side and demand-side options
 - *Supply-side* measures mostly would occur through contractual transactions and affect wholesale costs – e.g., purchase of energy, capacity from specific low/zero-carbon resources
 - *Demand-side* and distributed measures can affect both wholesale and distribution system costs by (a) reducing energy/capacity purchases, and (b) deferring distribution system investment – e.g., energy efficiency, demand response, distributed solar
- Cost effectiveness of achieving GHG reductions depends on (a) cost of action, (b) wholesale and/or distribution cost savings, and (c) quantity of GHGs reduced

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Measures Under Review (both reports)



Supply Side

- Ownership or purchase of energy, capacity, and/or RECs from low-CO₂ resources (a) in operation, (b) in development, and/or (b) proposed (with/without complementary storage capacity)
 - E.g., grid-connected wind, solar, hydro, nuclear
- Increased/accelerated purchase and retirement of renewable energy credits (REC)

Distributed

- Energy efficiency measures and programs
- Distributed low-carbon resources (e.g., solar PV) (with/without complementary storage capacity)
- Demand response measures/technologies
- Longer-term considerations (may be qualitative or quantitative)
 - Rate design (e.g., time of use rate structures, distributed solar tariffs)
 - Distributed solar/storage applications
 - Fuel switching (e.g., displacement of fossil-based heating with electric heat pumps)
 - Impact of increased penetration of electric vehicles
 - WMLP business model considerations

Metrics, Method



- Evaluation of options will quantify the following metrics:
 - Total CO₂ reductions, and the implied percent reduction in WMLP carbon emissions and intensity
 - Costs to achieve reductions (costs and financial impacts for the milestone years 2020, 2025, 2030, 2040 and 2050)
 - Representative impacts on WMLP customer bills
- Develop a supply curve in 3 steps
 - Estimate program costs for each GHG reduction program, measure or approach
 - Estimate potential cost reductions (if applicable) associated with actions (e.g., reduced energy/capacity costs), based on forecasted future costs
 - Estimate avoided GHG emissions based on the size(s) of the reduction measures or programs, and impact on *but-for* emissions of WMLP purchases
- Present results on an annual average basis for each milestone year
 - Potential CO₂ reduction quantities and costs (total costs, cost per ton of CO₂ avoided)
 - Representative ratepayer bill impacts for postulated reduction quantities
- Summarize uncertainties, feasibility, risks, and other considerations

Sources, Data



- Some data will be robust (e.g., energy efficiency program costs and savings)
- Some data will be general, based on historic information and industry knowledge (e.g., potential range of contract costs for renewable resource procurement)
- Some cost and GHG reduction estimates will be based on review of industry projections and third-party estimates (e.g., forward cost curves for distributed solar, storage)
- Reports will necessarily involve assumptions, forecasts, and approximations
- Our focus: **Transparency**
 - Preference for publicly-available data that may be reviewed by others
 - Clear and explicit assumptions, description of analytic method
 - Qualitative discussion of uncertainties and variability
 - Transparent application of professional judgment

Process, Schedule, Deliverables



Approximate project schedule as follows:

- Initial research and data collection (underway)
- Construction of supply curve model and cost analyses (through February)
- Completion of initial draft report (March)
- Development of longer-term analysis/report (March/April)
- Presentations, discussions regarding results (April)

Contact

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