



# Article 26

# Smart Grid Improvements

Enterprise Fund Hearing  
March 20, 2017



# Article 26

To determine whether the Town will vote to raise and appropriate, transfer from available funds in the treasury, or authorize the Town Treasurer with the approval of the Select Board to borrow by the issuance of bonds or notes under the provisions of Chapter 44 of the Massachusetts General Laws, the sum of 3,000,000, or any other sum, to be expended under the direction of the Town Manager for the purpose of purchasing and deploying smart-meters and smart-grid technology, including advanced communications networks, information and data management systems, distribution automation (DA) technologies, advanced metering infrastructure (AMI), system analytic capability, and distributed generation (DG) acquisition, said expenses to be paid by the ratepayers of the Concord Municipal Light Plant, and further that any premium received by the Town upon the sale of any bonds or notes approved by this vote, less any such premium applied to the payment of the cost of issuance of such bonds or notes, may be applied to the payment of costs approved by this vote in accordance with Chapter 44, Section 20 of the Massachusetts General Laws, thereby reducing the amount authorized to be borrowed to pay such costs by a like amount, or take any other action relative thereto.



# Existing Smart Grid Infrastructure

- 73 gateways
- 665 repeaters
- 935 meters
- 505 load control switches
  - 139 ETS Customers
  - 357 controlled hot water customers
  - 9 other



# Existing Smart Grid Services

- Demand response
  - ETS
  - Hot water
- Live meter data
  - Customer web portal
  - Monthly meter reads from the office
- Street light control
  - On/off only



# Future Smart Grid Wish List

- Demand response
  - ETS
  - Hot water
  - Thermostats
  - Electric vehicle charging
- Live meter data
  - Customer web portal
  - Monthly meter reads from the office
  - Power quality analysis, circuit loading, transformer sizing
  - Outage notifications
- Street light control
  - On/off and dimming
  - Fixture health



# Current Concord Initiatives to Support

- Green House Gas reduction
  - Demand response programs
  - New rate structures (TOU, CPP etc.)
  - Distributed generation
  - Strategic electrification
  - Energy efficiency
  - Storage
- Financial stability
- Reliability



# What Do We Need to Get There?

- Full AMI deployment
  - 8678 total meters
- Up to 1300 smart photocells
  - Existing devices are not compatible with LED
  - Existing devices do not have dimming ability
- Thermostats that do not require a C-wire
  - Most homes in Concord do not have this wiring
  - We are investigating possible solutions
- Remote disconnect
  - EV charging control
  - Pre-pay potential
  - Safer and more responsive shut-off interactions



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# Cost to Ratepayers?

- \$3,000,000 borrowing
- Assume a 10 year bond
- Assume 167,000,000 kwh sales annually
  - Difficult to forecast given how fast we are changing
  - CMLP is engaged in a strategic planning process to make the best forecast possible
- Median residential bill is 960 kWh
- Estimated cost to ratepayers:
  - \$0.00179 per kWh
  - \$1.72 per month for the median residential household



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