South Hadley Electric Light
Town of South Hadley

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NOTICE UNDER MASSACHUSETTS GENERAL LAWS
CHAPTER 30A, SECTION 20

BOARD OF COMMISSIONERS' MEETING

A meeting of the Board of Commissioners of the Town of South Hadley Electric Light Department will be held at **6:00P.M. on Wednesday, February 17, 2016**, in the Selectboard Meeting Room at 116 Main Street, South Hadley, Massachusetts.

AT THE ORDER OF ANNE S. AWAD,
CHAIR OF THE BOARD

Anne S. Awad, Chair

MEETING AGENDA

Call to Order

Public Comment

Meeting Minutes

Chair's Report

Town Solar Project / RFP

Mass Renewable Energy Trust

Board Discussion of Manager's Contract

Correspondence

Adjourn

Presentation to the South Hadley Electric Light Department

Solar Photovoltaic Systems Discussion

February 17, 2016

Renewable Generation Policy

Market Drivers

- Cost to develop Solar PV is more expensive than traditional, fossil-fuel based forms of energy generation.
- Federal and State incentives have been established to induce renewable energy development, foster green energy production, reduce dependence on foreign fuels and reduce greenhouse gas emissions.
- Legislative and regulatory incentives in Massachusetts provide targeted financial benefits to support the commercialization of renewable energy generation, particularly Solar PV.
- **Key Environmental Driver** - Solar renewable energy certificates (**SRECs**)
  - Worth up to 5 times the value of a traditional, renewable energy credit (**REC**) and supplies an annual revenue stream to offset capital and financing costs for the owner.
- **Key Financial Drivers** - Net metering credits and Investment Tax Credits
  - Generation delivered to the local electric utility in excess of any on-site, behind the meter, consumption. Net metering is the monetized value of the generation produced by the Solar PV and delivered to the electric utility for the benefit of the Host Customer.
  - Federal Investment Tax Credits are available to non-tax exempt entities.

Key Environmental Driver

Massachusetts Solar Carve-Out Program

- The Massachusetts Renewable Energy Portfolio Standard (RPS) is a statutory obligation that suppliers (both regulated electric distribution utilities and competitive suppliers) obtain a percentage of electricity from qualifying renewable generating facilities for their retail customers.
- The RPS began with an obligation of one percent in 2003, and then increased by one-half percent annually until it reached 4% in 2009. In 2009, as a part of the Green Communities Act of 2008, the RPS was broken into varying RPS Classes and included a provision for an annual 1% increase for certain types of systems, including solar.
- In 2009 a Solar Carve-Out program was developed and a market of Solar Renewable Energy Certificates (SRECs) was created as the vehicle to verify compliance with RPS requirements.
- In April 2014, due to a tremendous response to program incentives, the Commonwealth reset program goals from 400 MW by 2017 to 1,600 MW DC by 2020.
- In February 2016, the Commonwealth announced that the 1,600 MW goal had been reached. The Department of Energy Resources is expected to conduct a public process for the next round of solar incentives.
- According to the solar industry, in 2014 investment in solar facilities in MA reached upwards of $800 million, and produced 9,000 new solar jobs.

Key Financial Drivers

Net Metering and ITC

- Net Metering is the process of measuring the difference between the electricity generated by the solar photovoltaic array and delivered to the utility, and the electricity consumed by customer.
- Virtual Net Metering provides a financial benefit for the delivery of renewable generation to the utility distribution system.
- State law requires investor-owned utilities to buy renewable energy generation until the total installed capacity of net metered systems reaches 5% of peak demand for public sector projects and 4% of peak demand for private sector projects.
- Municipal Light Departments are not subject Net Metering regulations but often provide a wholesale-based option to their customers.
- The Federal Investment Tax Credit ("ITC"), which provides a 30% federal tax credit for solar systems installed on both residential and commercial properties, have been extended at current rates through 2019 afterwhich they decline marginally until 2021.

Solar Activity

Behind Municipal Light Plants

- All 44 Municipal Light Plants
  - Total number of Solar Photovoltaic Projects = 1,034
  - Total Capacity of Solar Photovoltaic Projects = >100 Megawatts
  - Municipalities with greatest solar photovoltaic activity:
    - Concord
    - Wellesley
    - Ipswich
    - Stow
- South Hadley Electric Light Department Only
  - Total number of Solar Photovoltaic Projects = 30
  - Total Capacity of Solar Photovoltaic Projects = 0.29 Megawatts
  - Type: All residential except for a privately owned system at the landfill

Municipal Light Department Programs

South Hadley Electric Light Department Highlights

- Maximum size: Residential = 10 kW, Small Commercial < 100 kW, Large Commercial ≤ 500 kW.
- Compensation:
  - *Residential: All solar generation is credited at full retail rate.*
  - *Small Commercial: Solar generation is credited at full retail rate if capacity limitations are achieved, otherwise, solar generation is credited at retail generation rate.*
  - *Large Commercial: Solar generation is credited retail generation rate.*
  - *Excess generation credits carried forward onto future bills. No cash payment and credits are available for no greater than 1 year*
- Distributed Generators: System that do not meet the policy may sell generation to buyers outside SHELD territory and pay wheeling fee.
- Third party Purchase Power Agreements are not allowed under the net metering rules above and will be treated as Distributed Generators.

Municipal Light Department Programs

Other Municipal Program Highlights

- Concord Municipal Light Plant
  - Rebates: $625/kW AC, cap of $3,125
  - Maximum size: 167 kW AC
  - Excess generation compensated at ISO-NE Day Ahead Spot price
  - Monthly charge for Distribution costs based on Solar PV system size.
- Wellesley Municipal Light Plant
  - Rebates: For systems sized in the 2-6 kW range, $700 - $2,100
  - Excess generation monetized and applied against future electric bills.

Municipal Light Department Programs

Other Municipal Program Highlights

- Ipswich Municipal Light Department:
  - Technical support to determine feasibility
  - MMWEC HELPS program for Residential Customers with facilities no greater than 10 kW.
  - Rebate: Base Incentive = $0.80/watt for maximum incentive of $4,250
- Stow-Hudson Light and Power Department
  - Rebates: $1.00 to $1.25 per watt up to maximum of $6,000 for Residential systems and $12,000 for Commercial/Industrial systems.
  - No net metering, but excess generation purchased at the Power Adjustment Charge. Maximum generation allowed is 30,000/kWh/yr.

Town of South Hadley

Program Options and Considerations

- Ledges Golf Course
  - Roof mounted and carport installations designed to reduce on-site consumption and demand.
  - Any excess generation should be credited to other Town locations.
  - Install electric charging stations for golf carts and other vehicles.
- Landfill
  - Expand existing solar photovoltaic installation and allow all generation to achieve financial credits at the rates defined in the Net Metering Policy and applied to other Town locations.
- Power Purchase Agreements
  - Town seeks to lease public land to a third-party for the exclusive purpose of developing solar photovoltaic systems as defined above, and buy the solar generation from the third-party under a power purchase agreement.
  - Favorable investment tax credits are available only to private entities. The Town would achieve the pass-through benefit.

Next Steps

Beacon Integrated Solutions

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Managing Director

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MASSACHUSETTS CLEAN ENERGY CENTER

MassCEC Overview

South Hadley Electric Light Department

February 17, 2016

MASSACHUSETTS CLEAN ENERGY CENTER

The MassCEC Mission

Build sustainable industry to create jobs, long-term economic growth

Cultivate a robust marketplace for innovation in clean technologies

Accelerate cost reduction for clean energy technology

Support training and education to build a skilled workforce

MassCEC History

1997

- *Electric Restructuring Act*
- Renewable Energy Systems Benefit charge assessed by utilities established
- Renewable Energy Trust Fund ("RET Fund") created, administered by Massachusetts Technology Collaborative (MTC)

2008

- *Green Jobs Act*
- Establishes MassCEC to accelerate job growth and economic development in the state's clean energy industry
- Creates Massachusetts Alternative and Clean Energy Investment Trust Fund

2009

- *Act Relative to Clean Energy*
- Designates control of RET Fund to MassCEC and adds to its mission supporting installation of renewable energy projects throughout the Commonwealth

MassCEC Key Facts

- **Small agency, big impact.** Our 60 employees run 25+ funding programs that support clean energy innovation, adoption, and workforce training.
- **Award-Winning Programs.** MassCEC has pioneered innovative, efficient and successful national award-winning programs like Solarize Massachusetts, Clean Energy Internship Program, and Commonwealth Solar Hot Water.
- **WTTC.** MassCEC owns and operates the Wind Technology Testing Center, the largest indoor wind turbine blade testing facility in North America.
- **Industry Report.** Our Clean Energy Industry Report is a key resource for measuring industry growth and reporting on industry needs.

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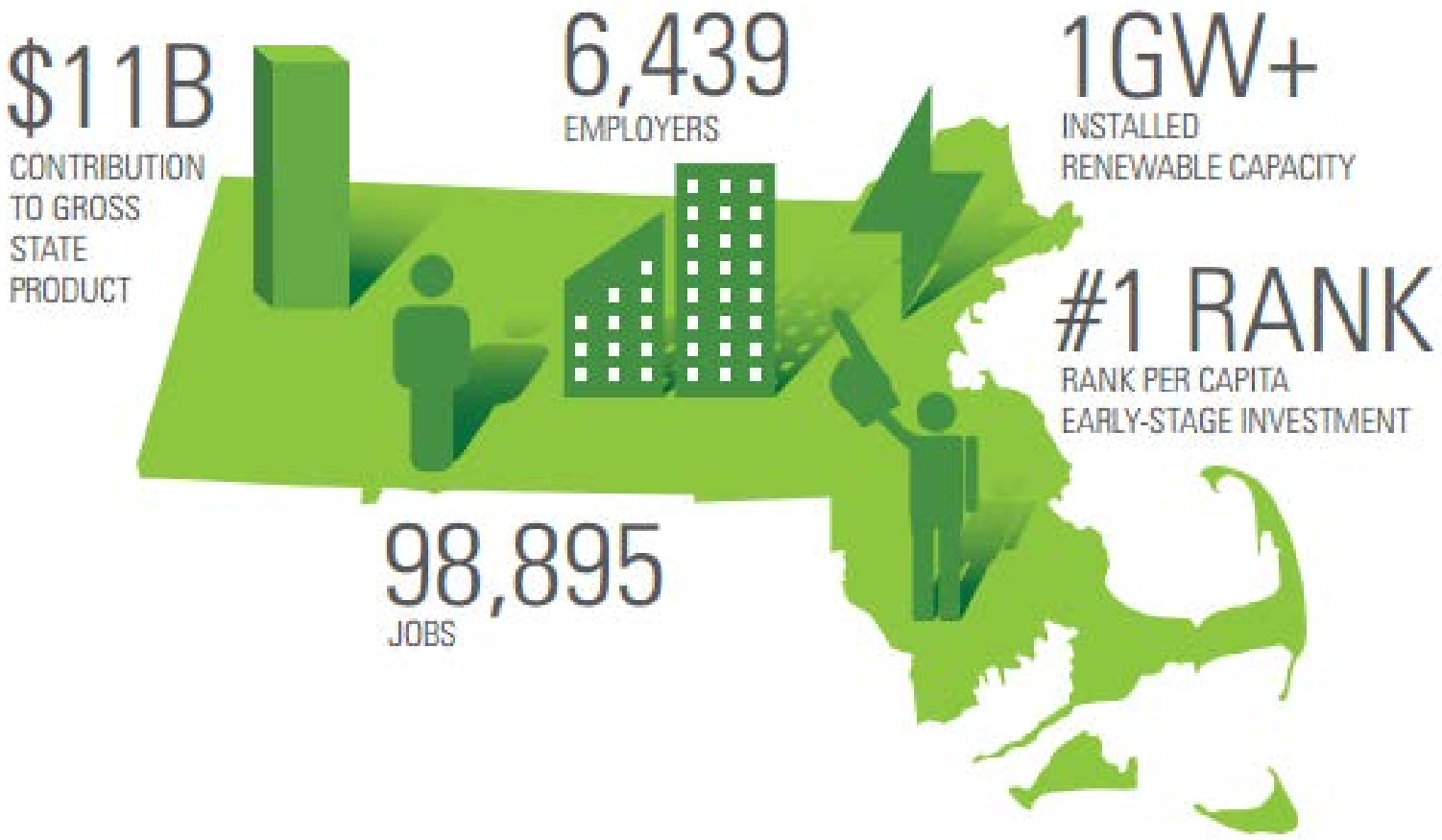
Clean Energy Industry in MA



MassCEC Structure

Renewable Energy Generation

- **Support the deployment** of clean technologies across the Commonwealth
- **Drive down energy prices** state-wide
- Manage key **cleantech infrastructure**: WTTC, Marine Commerce Terminal

Investments

- Provide **funding (debt and equity)** to companies along the entrepreneurial lifecycle to accelerate the commercialization of new technologies and attract private capital to promising companies

Innovation and Industry Support

- **Support and accelerate innovation** in clean energy and water innovation technology
- Support the **development of a trained and diverse workforce** to meet the needs of the rapidly growing Cleantech industry
- **Analyze** the growth and development of the industry to ensure transparency and effective impact

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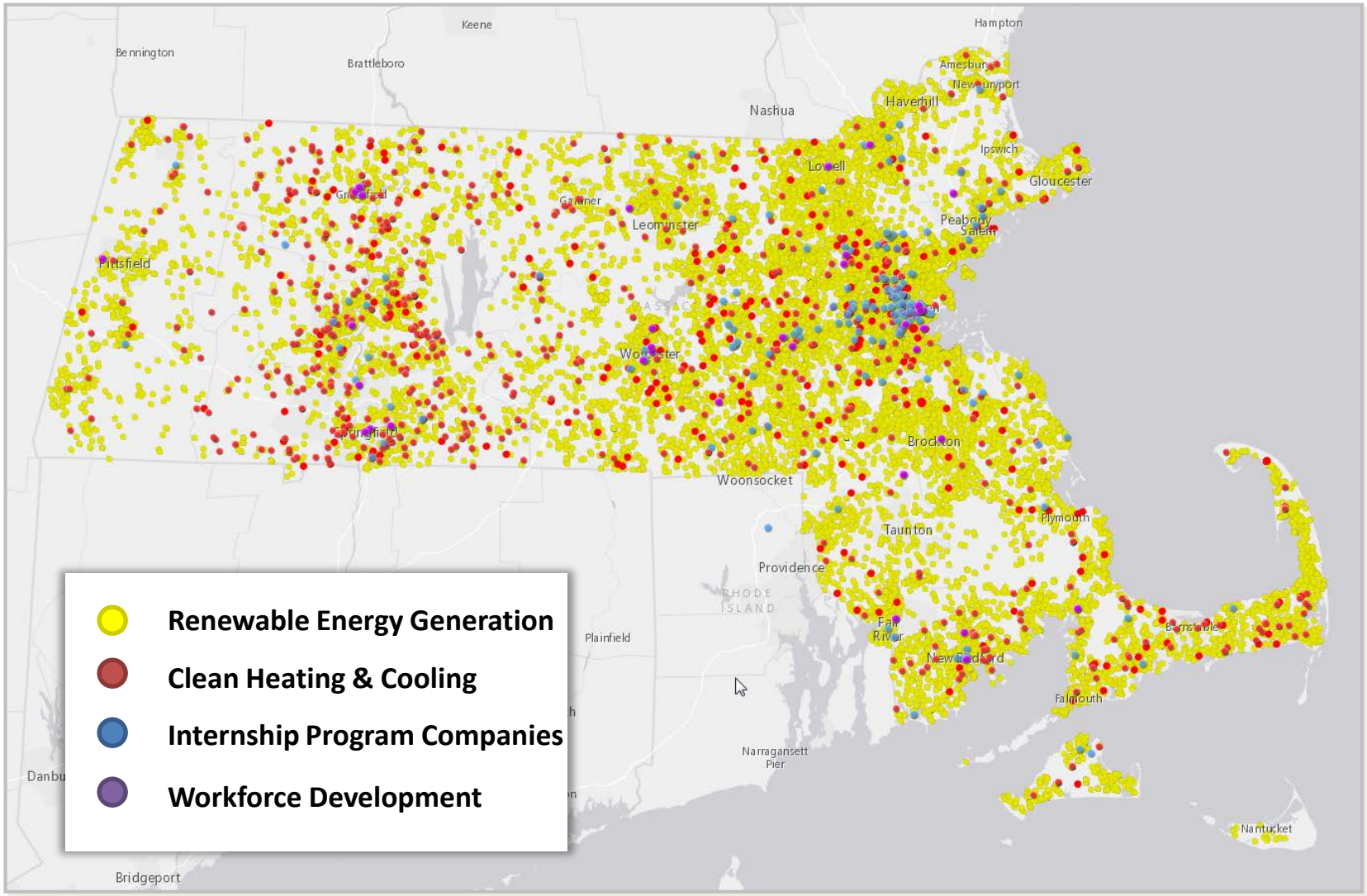


Key Programs: Renewable Energy Generation

Delivers targeted incentives designed to spur development and drive down the costs of renewable energy technologies, including **solar electricity, organics-to-energy, clean heating and cooling, wind and hydropower**.

Achieving cost-competitiveness through statewide deployment:

- Targeted incentives to drive down up-front installation costs
- Test innovative, new models that are scalable and replicable
- Grow promising nascent technology markets to achieve environmental and economic targets

Metrics showing success:

- To date, over 1 gigawatt of renewable energy has been installed in MA
- Over 3,000 Clean Heating & Cooling projects installed state-wide since 2013

Solar PV Programs

SOLARIZE MASS

- A community-based education and group buying program that allows residents to band together to save money on solar electric systems.
- 51 communities and 2,500 homes served to date.

MASS Solar Loan

- Helps Massachusetts residents to obtain low-interest loans to fund the installation of solar electricity systems for their homes.

MA Solar Connect

- Increases the adoption of solar for members of participating non-profit groups through an outreach and education campaign coupled with competitive pricing.

Clean Heating & Cooling

Heating and Cooling: 1/3 of overall MA energy use

- Average household spends $1,700 on home heating annually
- Areas without natural gas spend about $2,400
- 60% of South Hadley homes are heated with high-cost heating fuels

Clean Heating & Cooling (CH&C) Benefits

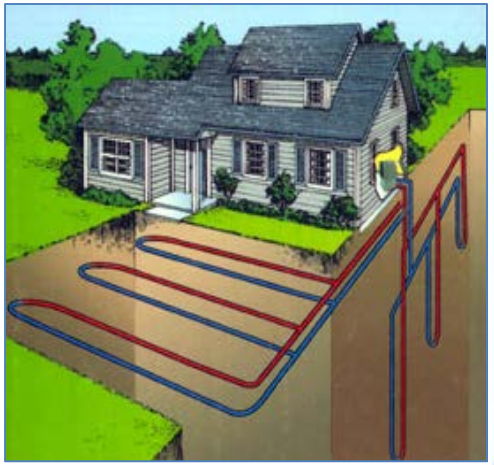
- Customer cost savings, particularly over high-cost heating fuels
- GHG reductions (~50% reductions over natural gas)

$30M commitment to CH&C through 2020

CH&C Technologies

Technologies

- Solar Thermal
- Biomass Heating
- Cold-Climate Air-Source Heat Pumps
- Ground-Source Heat Pumps



CH&C Programs

Residential Rebate Programs

- **ASHPs:** rebates up to $6,000
- **Central Biomass:** rebates up to $16,500
- **GSHPs:** rebates up to $20,000
- **Solar Hot Water:** rebates up to $4,500

Commercial Grant Programs

- **Existing solar hot water program:** grants up to $100,000
- **ASHPs, Central Biomass Heating, GSHPs:** Expected grant program launch in Spring 2016

Organics to Energy & Hydropower

Organics to Energy

- **Anaerobic Digestion:** supports technology to convert organic waste (agricultural, food, etc.) into electricity or heat
- **Feasibility Study Grants:** up to $45,000
- **Construction Grants:** up to $400,000

Commonwealth Hydropower

- Seeks to increase the output of the Commonwealth's hydropower assets for ecologically-appropriate projects
- **Feasibility Study Grants:** up to $45,000
- **Construction Grants:** up to $600,000

Wind Programs

Commonwealth Wind

- Assists appropriately-sited wind energy development in Massachusetts
- **Development Grants:** Up to $250,000 to
  1) guide wind projects through the detailed analysis and community engagement necessary to evaluate proposed projects, and
  2) to support the development of projects that demonstrate appropriate siting.

Key Programs: Innovation & Industry Support

Stimulates innovation and fosters an environment for technological advancement to make Massachusetts a leading destination for clean energy and clean water technology companies. Leads workforce development initiatives and higher education partnerships.

- Leverages federal R&D dollars to maintain Massachusetts' status as a global hub for cutting edge clean energy research
- Supports a robust clean energy ecosystem with structural support for incubators (Greentown Labs), accelerators (MassChallenge, Cleantech Open), applied research centers (Fraunhofer Center for Sustainable Energy Systems)
- Targets persistent gaps in the commercialization process for pilot and demonstration scale projects
- Trains a clean energy workforce for tomorrow

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Key Programs: Innovation & Industry Support

- **IncubateMass Program** – targeted financial support for clean energy incubators.
- **InnovateMass Program** – grants up to $150,000 for technologies approaching commercialization.
- **AccelerateMass -** grants to graduates of local cleantech accelerators to advance new technologies.
- **Mass as First Customer** – connecting innovative technologies with public sector customers.

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Key Programs: Innovation & Industry Support

- **Internship Program** – funds support clean tech companies taking on paid student interns.
- **Learn and Earn** – prepares Massachusetts high school students for clean energy careers and clean energy/STEM majors in higher education.
- **Successful Women in Clean Energy** – helps low and moderate-income female workers build careers in the clean energy industry.

Key Programs: Investments Division

- **Catalyst Program**: Support university teams and early stage start-ups to fund targeted proof-of-concept projects.
- **AmplifyMass Program**: Provide grants and investments to university teams and Massachusetts-based companies receiving ARPA-E awards.
- **Investments in the Advancement of Technology**: Support early stage and growth companies in development and commercialization stages.
- **Investments in Job Creation**: Support early stage and growth companies in development and commercialization stages.
- **Follow-On Investments**: Provide follow-on investments in existing MassCEC portfolio companies through transition to later funding stages on way to commercialization.

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Thank You!

Questions?

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