Staff Subcommittees on Energy Resources & the Environment and Water

NATIONAL GOVERNORS ASSOCIATION

NARUC
Staff Subcommittees
Joint Meeting
Energy Resources and the Environment and Water

Sue Gander
Division Director
Environment, Energy & Transportation Division
NGA Center
November 12, 2017

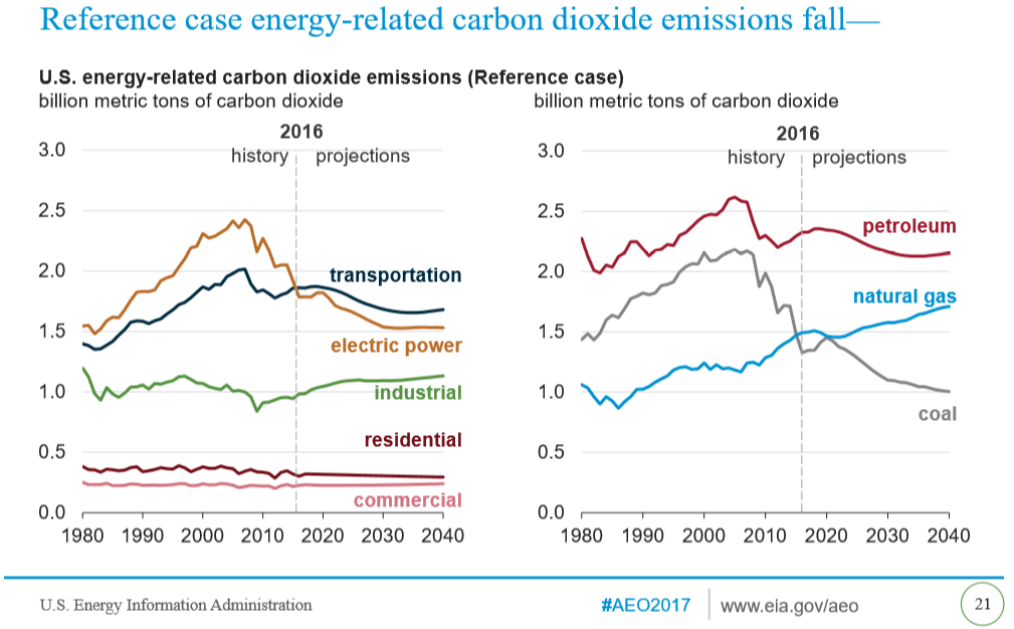
Many Drivers of State Voluntary Climate Actions

- State Power Sector Modernization Initiatives
  - Case Study: Washington
- Energy Technology Innovation
  - Case Study: Rhode Island
- Energy-Water Nexus
  - Case Study: California
- Nuclear Power Market Viability
  - Case Study: Connecticut
- Economic Development & Corporate Sustainability Goals
  - Case Study: Kentucky

Power Sector Modernization (PSM)

Case Study: Washington

- NGA Center working with 4 states including Washington on a 18-month initiative on Power Sector Modernization.
- Washington is pursuing PSM activities to align with the governor's deep decarbonization objectives.



Goals:

1. Improve capacity of the grid to incorporate increasing low-carbon variable and distributed energy, while maintaining reliable and affordable service; and
2. Increase beneficial electrification, especially electric vehicles. Beneficial electrification means the conversion of end uses (e.g. heating, water heating, cars) from fossil fuels to electricity in order to reduce greenhouse gas emissions.

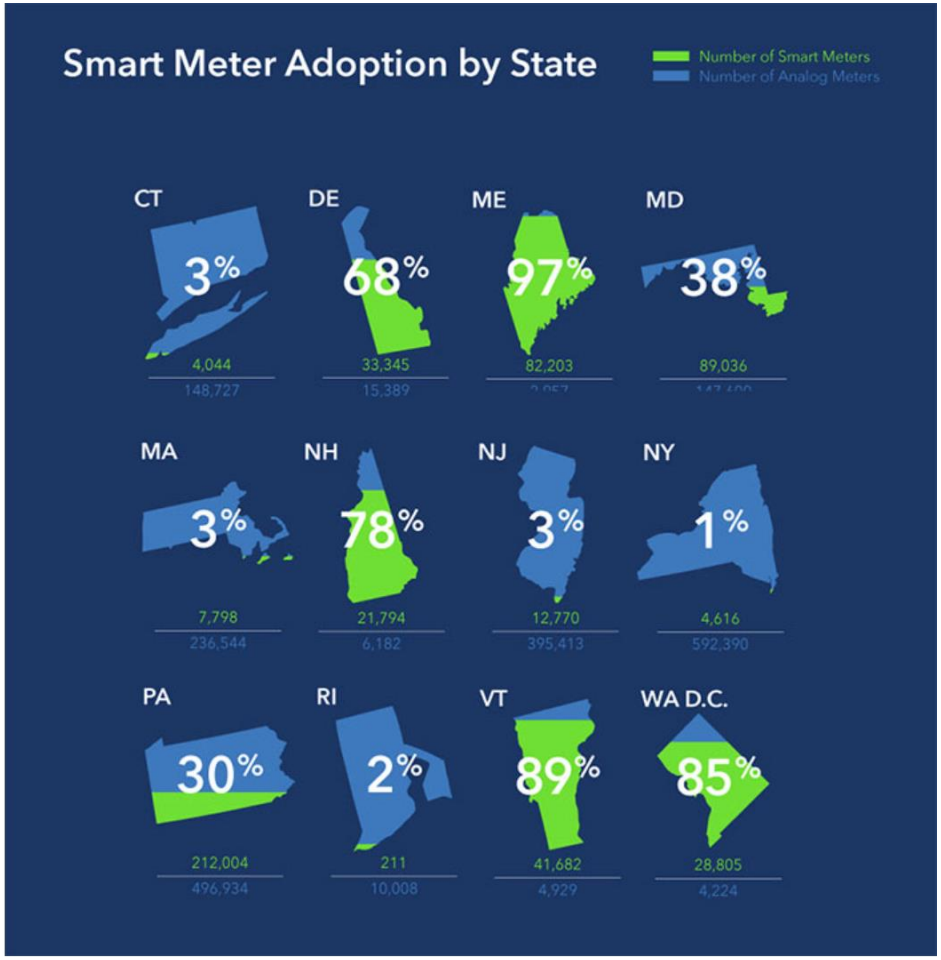
Power Sector Modernization (PSM)

- Many solutions under consideration would require the Utilities and Transportation Commission's (UTC) expertise and authority:
  - Incorporate distribution grid planning into long-term integrated resource planning processes, including impacts of transportation electrification.
  - Explore performance-based regulation and alternative business models for utilities.
  - Assess the potential of each utility to develop demand response resources.
  - Mitigate demand charges that inhibit expansion of fast charging infrastructure.

Energy Technology Innovation

Case Study: Rhode Island

- Under NGA's PSM, Rhode Island is assessing role of smart meters and software platforms, advanced metering infrastructure (AMI) in modernizing the grid, and helping meet the state's clean energy and emissions reduction goals.
- Staff from the RI Division of Public Utilities and Carriers (DPUC) are working on best approach for implementing this AMI goal.
- The RI team used analysis by Lawrence Berkeley National Lab and the Regulatory Assistance Project to help them assess their options for the type of smart meter technology to use to protect from the risk of obsolescence.



Source: Northeast Energy Efficiency Partnerships (NEEP), 2017

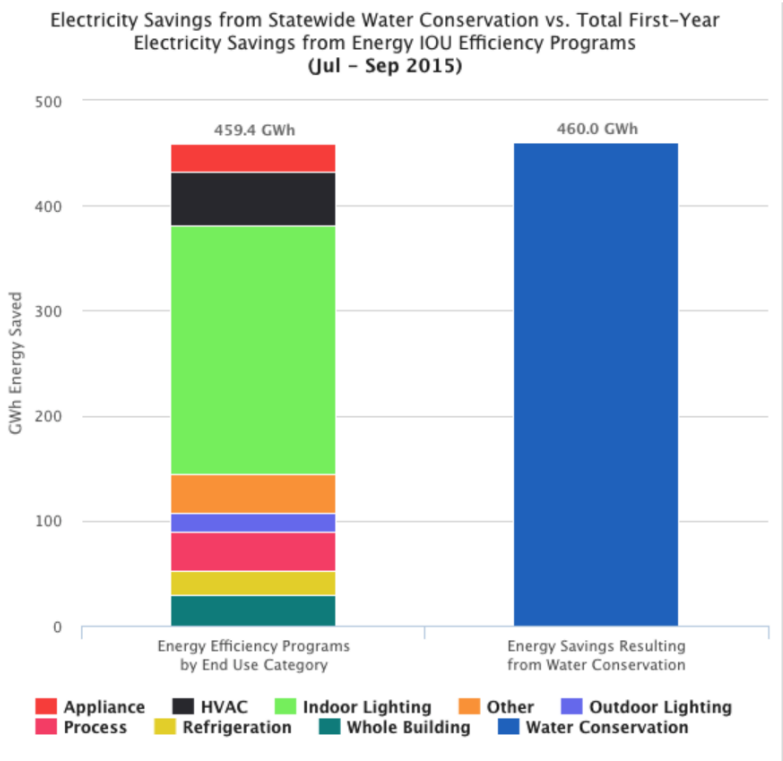
Energy Technology Innovation

- Many policy considerations and questions require DPUC's expertise and authority:
  - Assessing the need for AMI.
  - Ensuring that AMI enables customer choice and utility visibility and control of the system.
  - Are there scenarios in which goals can be met without AMI deployment?
  - What are the optimal capabilities of AMI and how should they be valued?
  - What changes can AMI facilitate and how should they be valued?
  - Determining an appropriate deployment strategy
  - Assessing the cost and lifespan of AMI technology
  - Understanding the appetite from utility or customers to use the full functionality of AMI (such as time-varying rates)

Energy-Water Nexus

Case Study: California

- NGA Center held an Experts Roundtable on the Energy-Water Nexus in February 2016 that included representatives from five state (AZ, CA, CO, UT, and AR).
- Based on this event and further research, NGA released a paper highlighting key policies and programs states can pursue to achieve greater energy and water savings.
- CA is a leading state working on this issue.
- From a climate change perspective, a recent study from U.C. Davis found:



water conservation efforts over a three-month period in the State (primarily reduced lawn watering) resulted in indirectly saving 460 GWhs of energy.

This quantity, 460 GWh, is equivalent to the energy saved from all of the state's investor-owned utility energy efficiency programs over the same period, and is equivalent to reducing the amount of CO_2 emissions from energy use at 36,966 homes for 1-year (EPA Greenhouse Gas Equivalencies Calculator).

Energy-Water Nexus

Policy recommendations from NGA paper that require PUC expertise/authority:

1. Allow electric utilities to be compensated for water conservation and indirect energy savings in their energy efficiency programs.

   Example: To begin process, the California PUC (CPUC) developed Water-Energy Program Cost Effectiveness Calculator that estimates the indirect energy savings of water conservation measures.

2. Include water co-benefits in electric utility planning processes and considerations of new electricity capacity.

   Example: The CPUC, when considering a power plant retrofit request, required a study assessing economic value of water that would not be withdrawn if the plant was replaced with energy conservation and renewable energy. Found several alternatives, in part because of considering the co-benefits of water savings.

3. Examine water rate designs that support conservation while maintaining utilities' financial stability.

   Example: In CA, Irvine Ranch Water District public water utility implemented a tiered pricing strategy to encourage conservation. Each HH charged base rate for the first tier of water consumed and a higher rate for additional use. Achieved 37% drop in water use after it implemented the tiered pricing structure (1990).

Nuclear Plant Viability

Case Study: Connecticut

- NGA has been working with states on nuclear policy issues, hosting a nuclear workshop in February 2017 and webinars ir the fall of 2017.
- A number of states are grappling with whether to provide support to existing nuclear plants to help meet their climate change goals and reliability requirements.
- For example, Connecticut is currently conducting a study on the economic viability of the Millstone plant required by an Executive Order issued by Governor Malloy this summer and is planning on releasing this study along with policy recommendations by February 2018.
- The Governor also signed a bill in October 2017, *An Act Concerning Zero Carbon Procurement*, that would potentially allow the Millstone nuclear power plant the ability to compete with renewable sources of power pending approval by the Department of Energy & Environmental Protection (DEEP) and the Public Utilities Regulatory Authority (PURA).

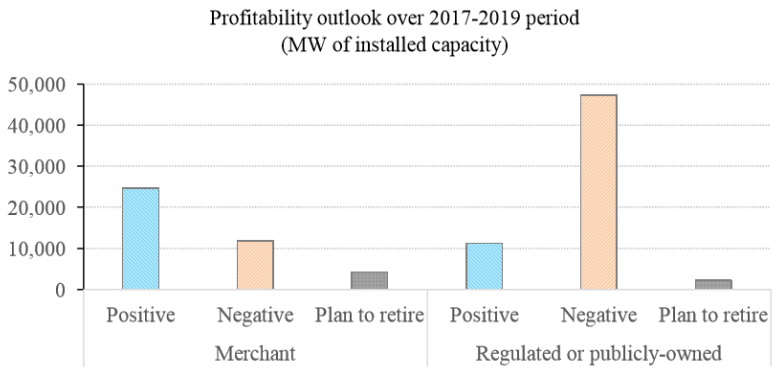


Figure 1. Market signals indicate that 18 GW of nuclear capacity are retiring or are merchant plants at high risk of retiring prematurely in the U.S.

Source: MIT, Early Nuclear Retirements in Deregulated U.S. Markets: Causes, Consequences and Policy Options

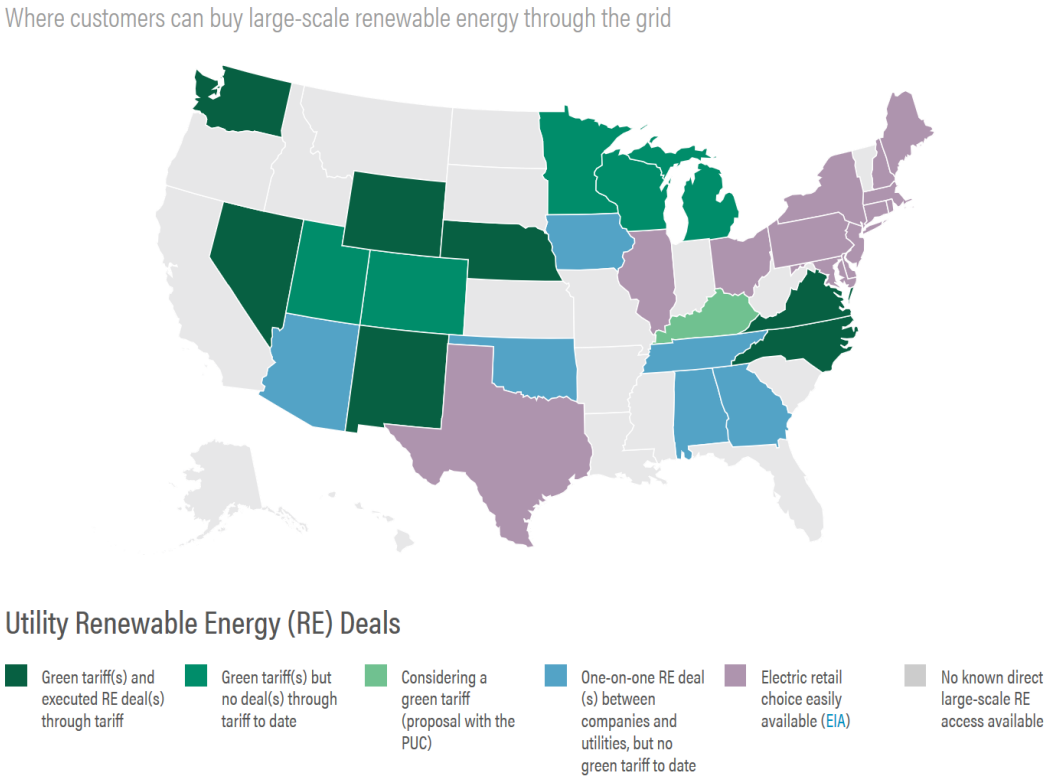
Nuclear Plant Viability

- Several policy considerations that require PURA's expertise and authority:
  - Evaluating the current and projected economic viability of nuclear generating facilities.
  - Evaluating the role of existing nuclear facilities and other zero-carbon resources in meeting environmental and reliability requirements.
  - Determining the best mechanisms to meet CT's environmental and reliability requirements and how such mechanisms should be used.

Economic Development & Corporate Sustainability Goals

Case Study: Kentucky

- As part of the PSM project, Kentucky is assessing the climate change/sustainability goals of companies located in the State and ways to provide zero-carbon resources to help meet these corporate goals and to help support economic development.
- Staff from the Kentucky Energy & Environment Cabinet (EEC) and the Kentucky Public Service Commission (PSC) are working on potential solutions to help meet these corporate energy needs, including assessing green tariff options that have been adopted in other states with a similar context.



Source: World Resources Institute (WRI), 2017

Economic Development & Corporate Sustainability Goals

Solutions that the State is considering that would require PSC's expertise and authority include:

- Develop a green tariff option in collaboration with utilities to meet the needs of companies in the state by providing access to energy resources that meet their sustainability goals.
- Develop a tariff option for distributed energy resources (DER) that would meet the needs of commercial and small industrial customers seeking to access alternative energy resources.
- Optimize the use of current resources, including assessing ways to avoid cost-shifting in tariff structures, and developing policies that support continued reliability.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Staff Subcommittees on Energy Resources & the Environment and Water

State & Local Climate Leadership: Implications for Public Utility Commissions

James Bradbury
Georgetown Climate Center

November 12, 2017

NARUC Annual Meeting and Education Conference
Baltimore, MD

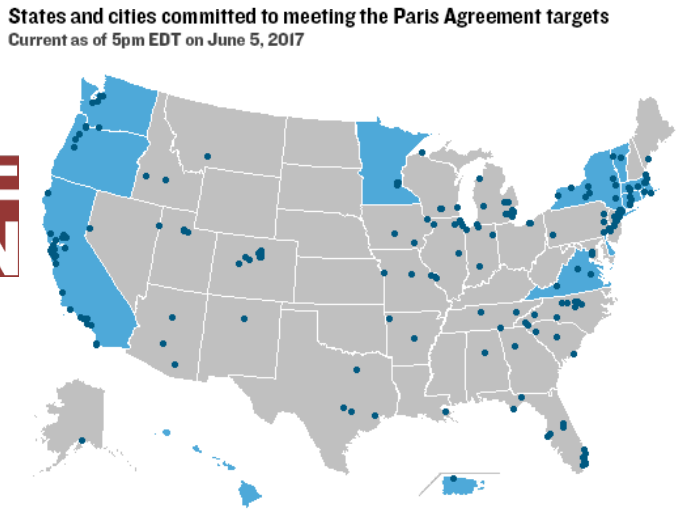
US State and Local Engagement on Climate: Georgetown Climate Center's Role

- Inform federal dialogue with lessons of states
- Serve as resource to states on climate, clean energy, adaptation
- Support states in meeting climate goals through convening, analysis, tools, etc.

Outline

- State, local and business reactions to U.S. withdrawal from Paris Agreement
- Ongoing state collaborations on climate action
- State climate policies that affect PUCs
- PUC actions that help to achieve climate goals

Withdrawal from Paris and Immediate Response



WE ARE STILL IN

June 5: over 1,200 state, city, and business leaders launch the We Are Still In coalition.

Now, over 2,500 leaders have joined

UNITED STATES CLIMATE ALLIANCE

CALIFORNIA · COLORADO · CONNECTICUT · DELAWARE · HAWAII · MASSACHUSETTS · MINNESOTA

NEW YORK · NORTH CAROLINA · OREGON · PUERTO RICO · RHODE ISLAND · VERMONT · VIRGINIA · WASHINGTON

June 1: NY, WA, and CA form the US Climate Alliance

Now, 15 states and territories have joined

GEORGETOWN CLIMATE CENTER
A Leading Resource for State and Federal Policy

https://www.vox.com/energy-and-environment/2017/6/7/15745938/google-apple-climate-change-coalition

Ongoing State Collaboration

- RGGI

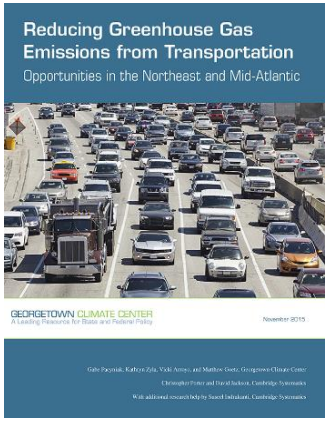
- Western Climate Initiative
  - Broad effort to coordinate climate policies (States and Canadian Provinces)
  - Includes Linked carbon markets
  - California and Quebec were recently joined by Ontario

Ongoing State Collaboration Cont.

- Transportation and Climate Initiative

Collaborating on EV policies and infrastructure planning

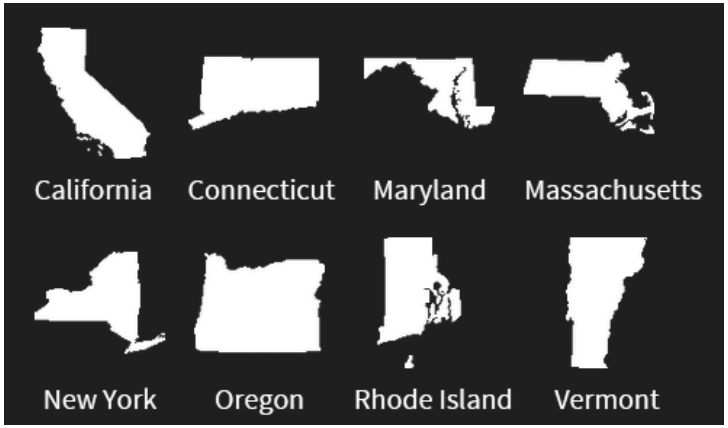
Working on potential market-based policies

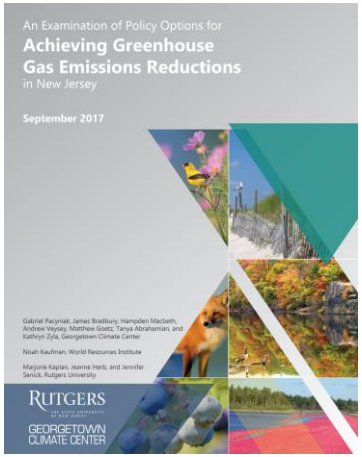


- Zero-Emission Vehicle MOU

  Goal = 3.3 million ZEVs by 2025, in these 8 states

  Working together on policies and programs





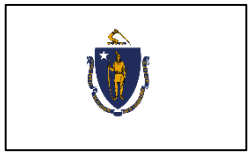
State Climate-Related Actions have Implications for PUCs

- Accounting for SCC in cost-benefit analysis of proposed utilities investments or during integrated resource planning

- Using advanced methane sensing technologies to help identify leaks and prioritize natural gas system repairs

Source: Rutgers University, Georgetown Climate Center, World Resources Institute. *An Examination of Policy Options for Achieving Greenhouse Gas Emissions Reductions in New Jersey*

PUC Actions Contribute to Meeting Climate Goals



- Proceedings on “Grid of the Future” (Rate design, utility business model, distribution system planning, EVs)
  - *Massachusetts Grid Modernization (D.P.U. 12-76-B)*
  - *Transforming Maryland’s Electric Grid (PC44)*
  - *Rhode Island’s Power Sector Transformation Initiative*

- Micro-grid development
  - *Connecticut created a Microgrid Program to help support local distributed energy generation for critical facilities.*
  - *New Jersey BPU recently approved $2 million in funding for 13 microgrid feasibility studies*

Key considerations for PUCs assessing potential electric utility investments in EV charging

- How much charging infrastructure is needed?
- What grid upgrades and investments will be needed?
- How can regulators help ensure equitable access to charging infrastructure?
- How should the costs and benefits of utility investments be assessed, and how can benefits be maximized?
- How should utilities recover infrastructure investment costs?

Source: Georgetown Climate Center and MJB & Associates, *Utility Investment in the Electric Vehicle Charging Grid: Key Regulatory Considerations*

Final thoughts

- State and local governments have a long history of leading on climate action
- The lack of federal leadership opens a new chapter for states to help achieve Paris goals
- Changing markets and new technologies are driving power sector transformations that implicate PUCs
- State climate efforts have implications for PUCs
- PUC proceedings can help states achieve climate goals
- Meeting climate goals in ways that benefit all customers, while maintaining or improving grid reliability, requires new strategies and planning

Thank you!

For questions or more information:

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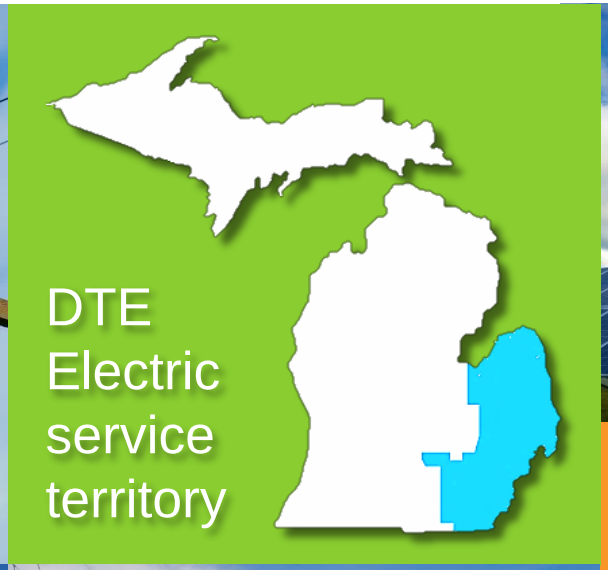
Staff Subcommittees on Energy Resources & the Environment and Water


DTE Energy®
DTE Energy's plans for
cleaner electric generation

DTE Electric overview



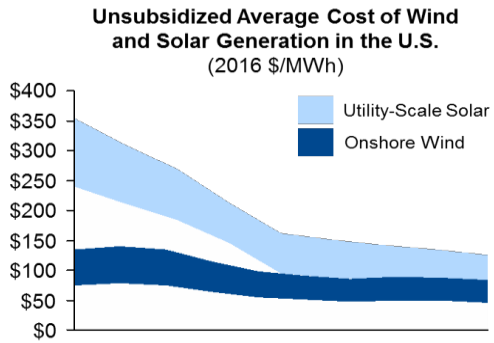
Founded
1886

10,000
employees

Powerful forces are causing the most significant changes the industry has ever experienced

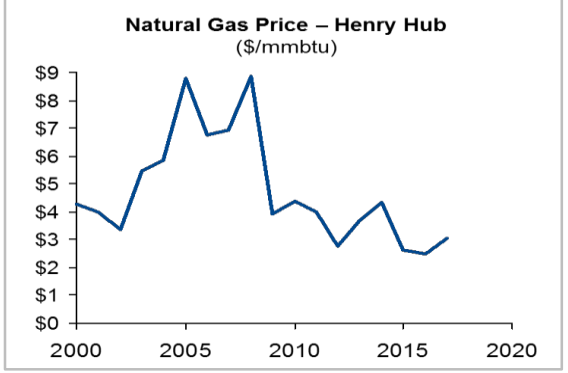
DTE Energy

Falling Renewable Costs



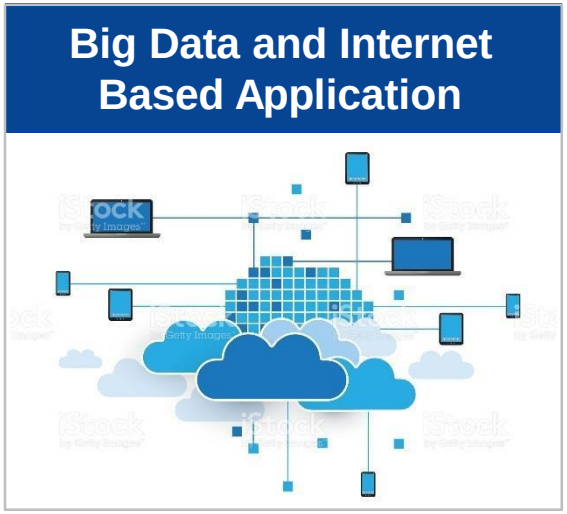
Increasing Energy Efficiency

Low Gas Prices



Accelerating Technology Innovation

Big Data and Internet Based Application

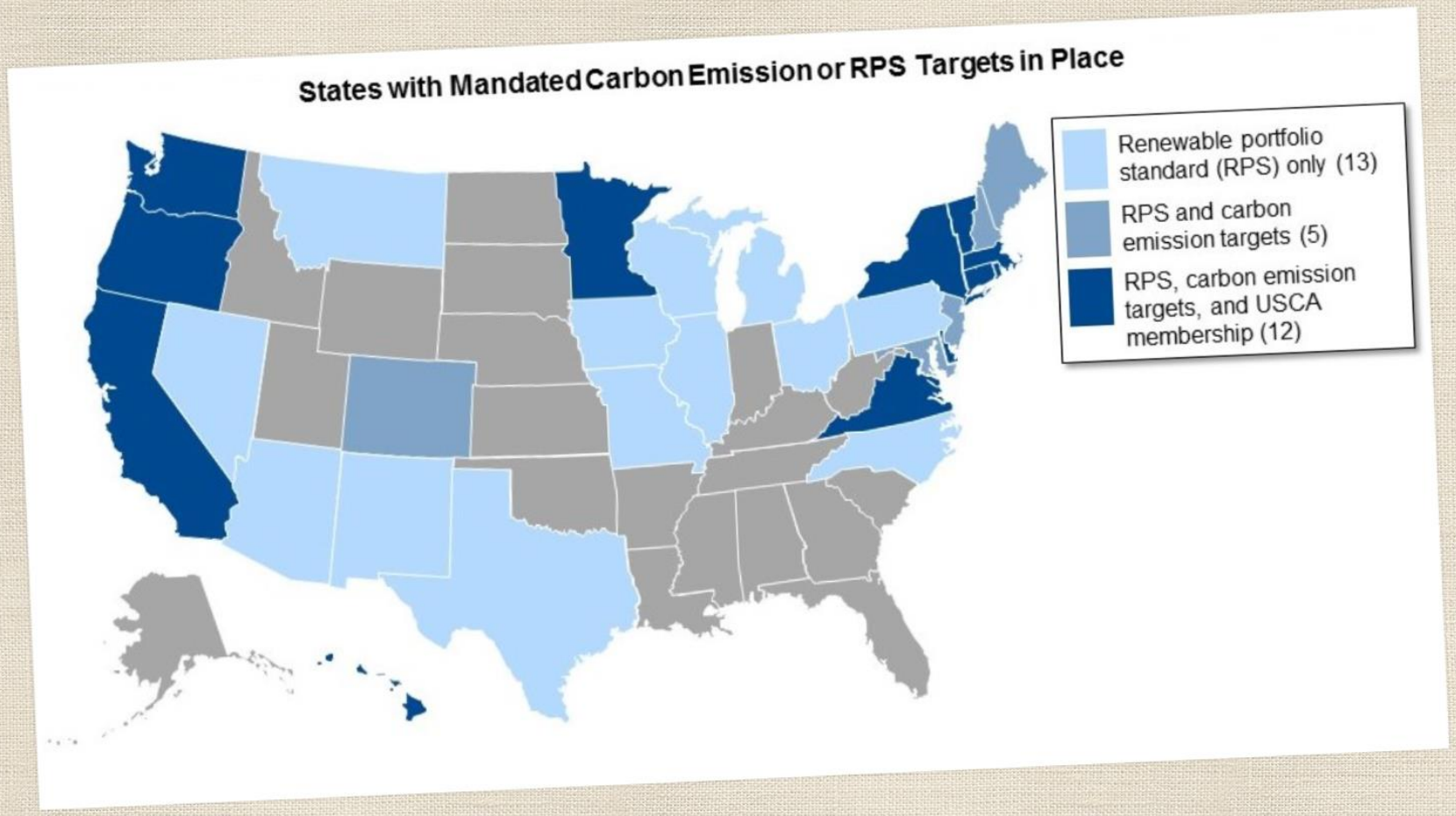


Evolving Customer Needs

More than half the states in our nation have legislated CO_2 and/or renewable targets

DTE Energy

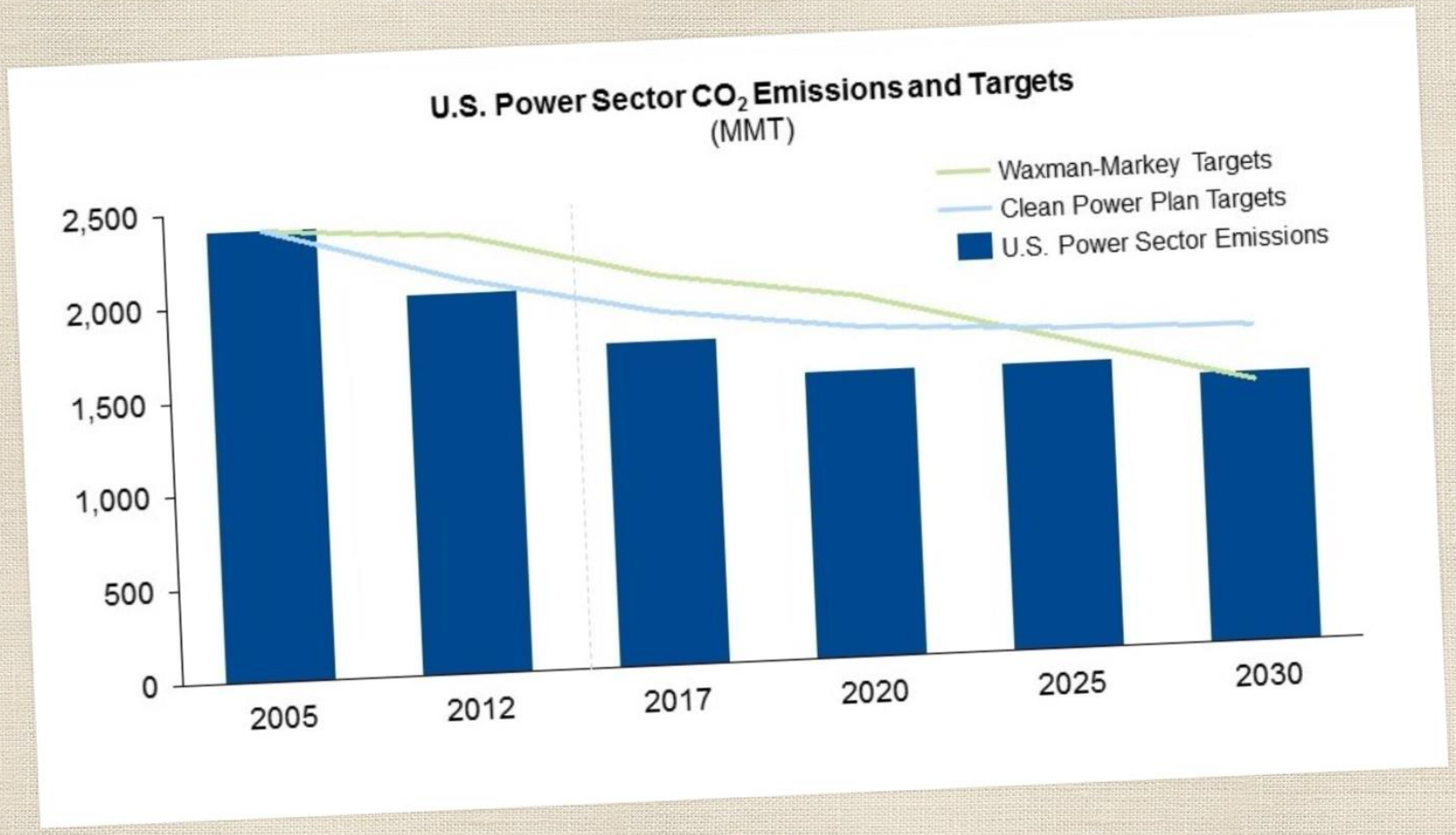
State policy



With Federal CO_2 targets in question, the U.S. is still on track to outpace Clean Power Plan targets

DTE Energy

Decreasing carbon emissions



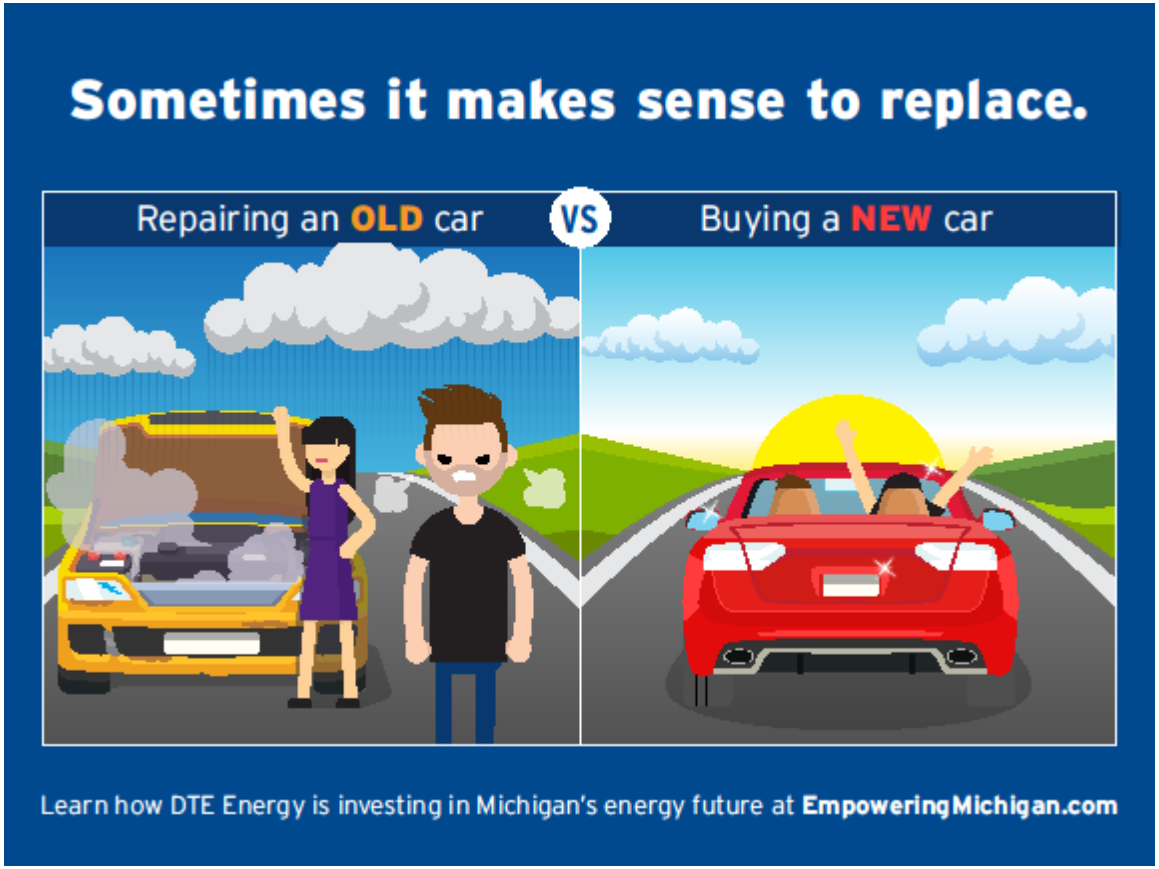
DTE is embracing industry changes by focusing on three key areas

DTE Energy

Changing Electric Power Industry

- **Decarbonizing Electricity Supply**
- **Advancing Energy Efficiency and Demand Response Programs**
- **Building a 21st Century Electric Grid**

It’s time to replace Michigan’s aging coal plants with cleaner generation sources



DTE has considered the cost of retiring existing generation and building new generation, and the impact on its customers. We are working to ensure we’re able to complete the transformation while keeping costs affordable for both its business and residential customers.

Gas generation and renewables will replace coal-fired generation

DTE Energy

2017 - 2023 **Retirements*** **2024 - 2030**

River Rouge

St. Clair

Trenton

Belle River

Additions*

Natural Gas

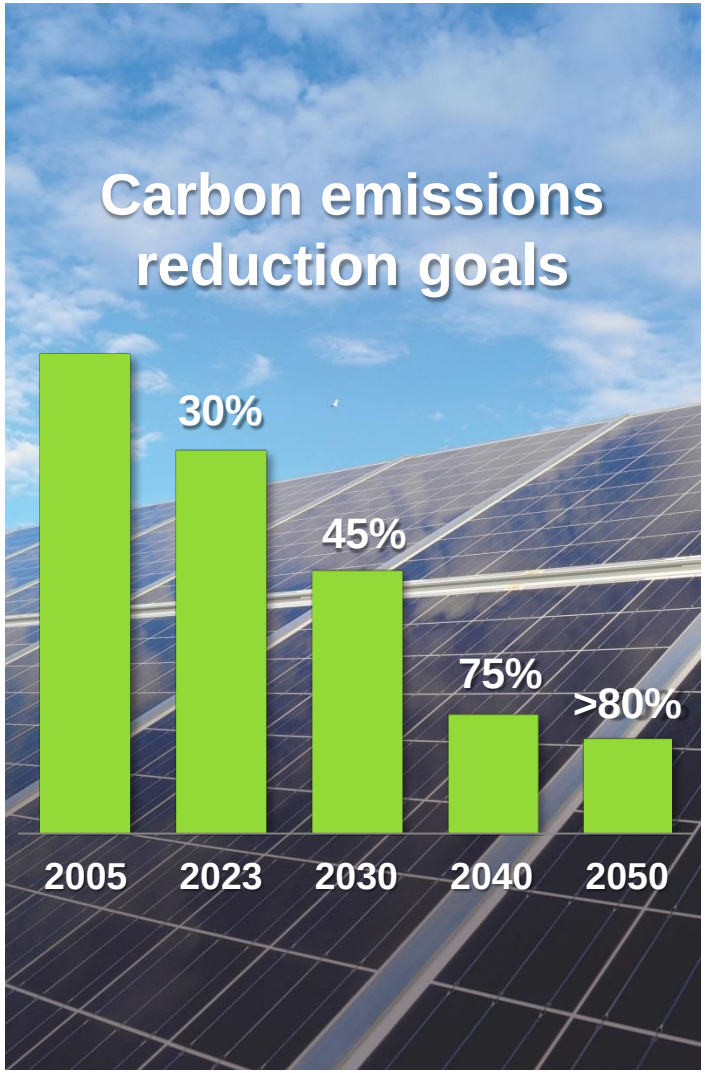
Wind

Solar

Ludington Pumped Storage Plant

* Timing and mix subject to change.

DTE is shifting generation away from coal to more natural gas, wind and solar – this will result in a significantly lower carbon footprint



Pinnebog Wind Park

- 50 MW in Huron County
- Latest addition to DTE's 13 wind parks that deliver 910 MW capacity

Lapeer Solar Park

- Largest solar array in Michigan
- One of the 31 solar parks that deliver 66 MW capacity

Detroit Solar Park

- One of the largest urban arrays in the U.S.

MI Green Power

- Pilot program for customers wishing to go beyond 10% renewable energy

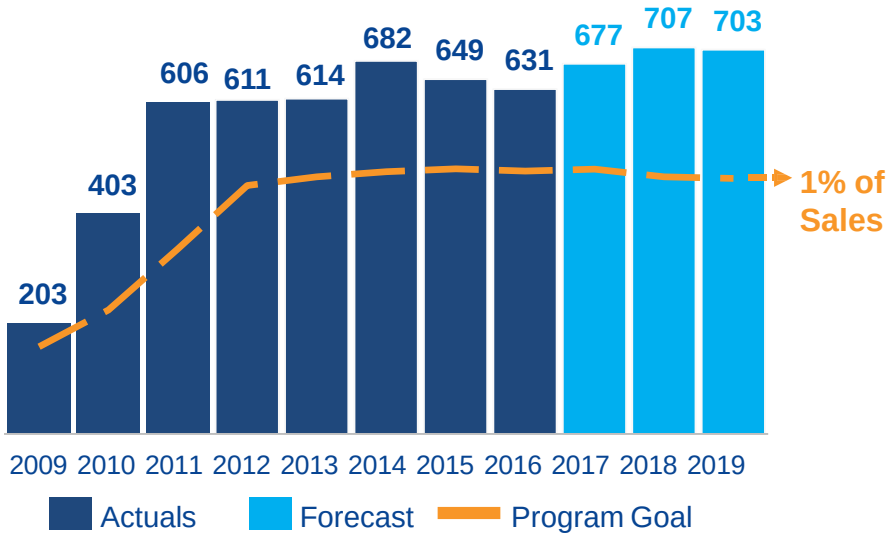
Additionally, the Company has a strong energy efficiency program with more than 2.4 million electric customer participations recorded; DTE will continue to exceed program goals

DTE Energy

Electric & Gas Participation

- **34,000,000** Bulbs
- **182,000** Recycled Appliances
- **339,000** Apartment Units
- **267,000** Direct Install Homes
- **242,000** Home and School Kits
- **385,000** Rebate Checks
- **59,000** Low-Income Weatherization
- **79%** Top Box Customer Satisfaction (9 or > out of 10)

Electric Savings: GWh



Current savings are equivalent to the energy required to power all the homes in **Ann Arbor** for over **4 years** and to heat these homes for **2 years**

Total savings through 2019 are equivalent to **4.6M** Metric Tons of CO2 or **672,937** homes' electric use for one year

Forecast includes planned amounts to be filed with MPSC in July 2017

Energy Efficiency Online Marketplace (OLM)

DTE Energy

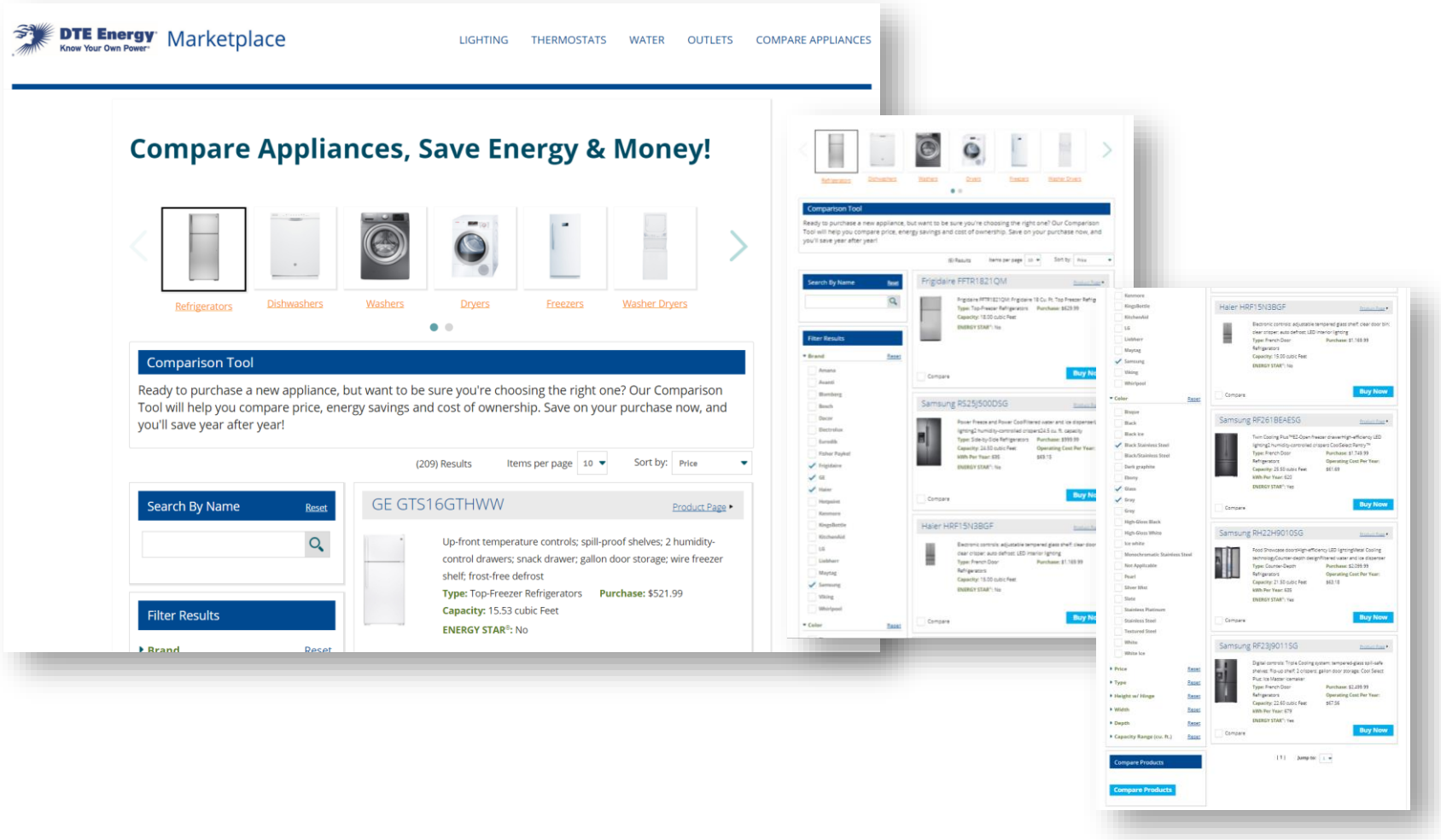
Why an OLM

- Approximately 8.5% of all retail transactions are occurring online*
- OLM provides customers an option to purchase incentivized products
- Platform overview
  - A variety of existing white labeled platforms facilitate transaction
  - Secure transactions
  - Fulfillment conducted through program partners or product vendors
- Broadens program's reach across service territory
- Targeting communities where retailers are within close proximity

*https://www.census.gov/retail/mrts/www/data/pdf/ec_current.pdf

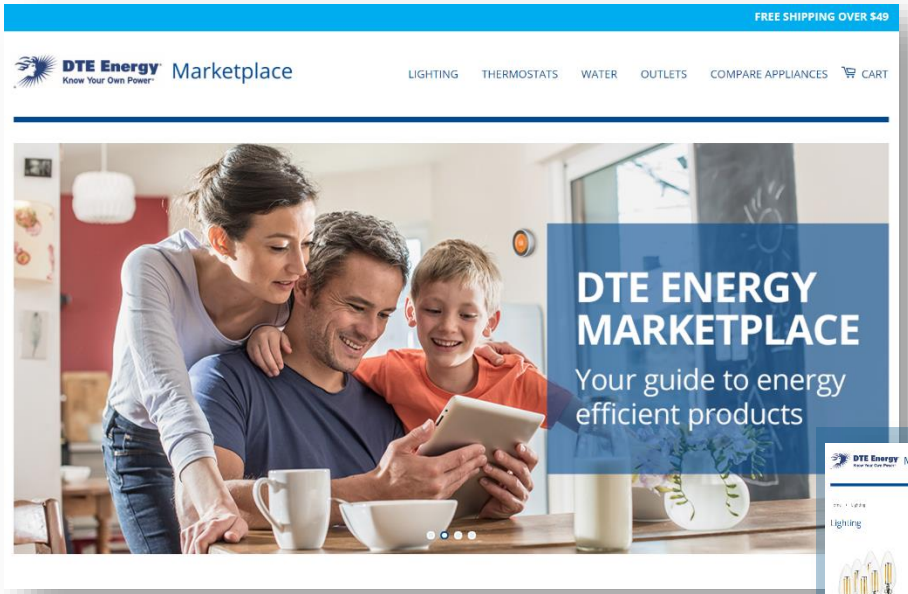
Marketplace – Shopping Tools for Customers

Product Comparison Helps Customers Choose the Right Products for Their Needs

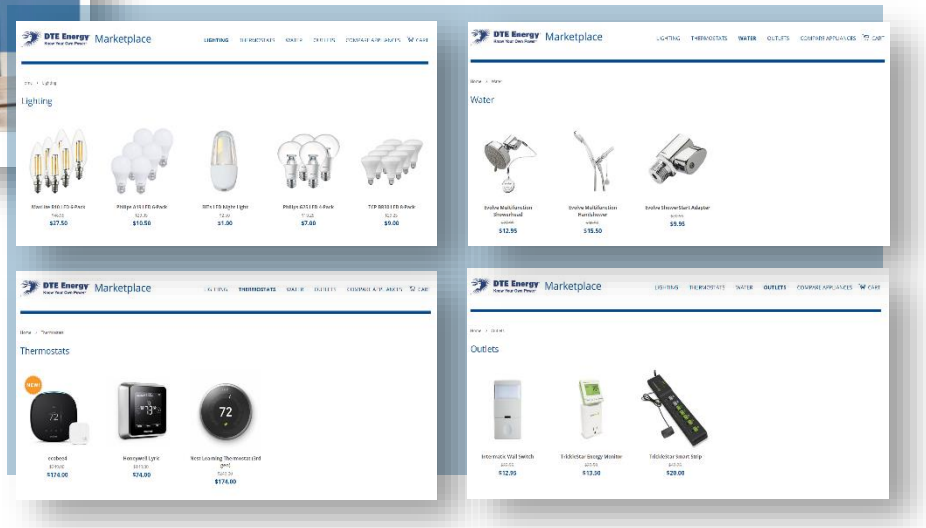


Marketplace – Engagement Touchpoint

Drive Product Purchases and Savings | Build Customer Trust and Relationship



- 4 product categories, 15 products
- Product mix:
  - Smart Thermostats
  - Lighting
  - Outlets and APS
  - Water-Saving Products



DTE Energy is a Founding Visionary Partner of the Detroit 2030 District

DETROIT 2030 DISTRICT®

- Detroit 2030 Districts is a challenge for commercial buildings to meet a 50% reduction in energy use, water use, and transportation by 2030
- This partnership is aligned with DTE's mission to reduce carbon emissions 80 percent by 2050 and provide affordable energy options to our customers
- Our support of the Detroit 2030 District is part of our commitment to empower Michigan businesses and enhance their success through educating and promoting energy efficiency strategies. This effort will:
  - Support sustainable futures for Detroit businesses
  - Assist in healthier environments, lower energy costs and a stronger economy

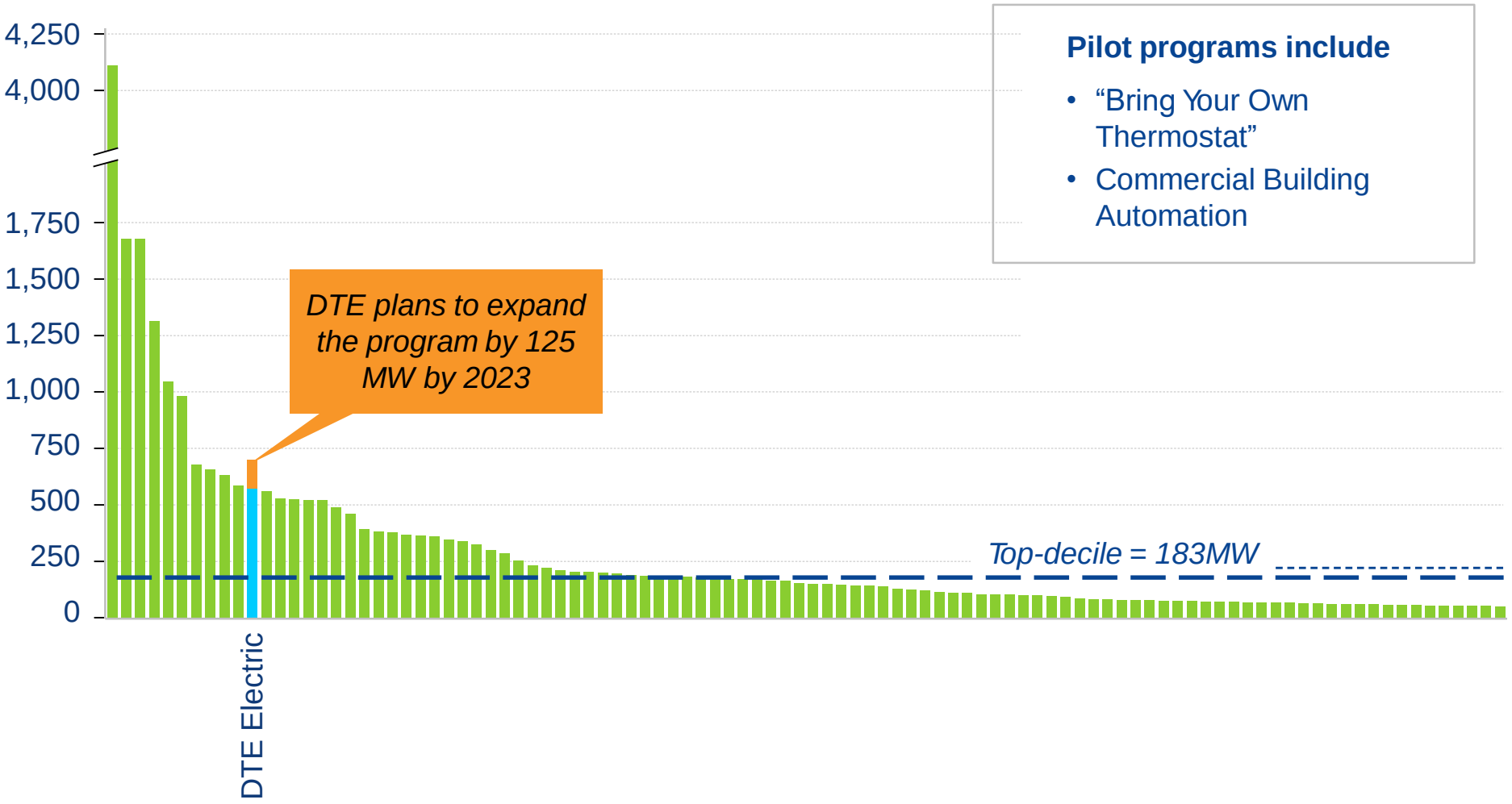
DTE Energy has been a title sponsor of the Michigan Battle of the Buildings since 2015

- The Michigan Battle of the Buildings is an awards and recognition program for energy use reduction open free to all Michigan area commercial, industrial & multi-family buildings
- Our sponsorship is part of our commitment to encouraging responsible and efficient energy use for all of our customers
- More than 93 Million square feet are included in this years competition
- Last year's competition resulted in energy savings greater than 22,000 metric tons of CO_2

DTE is one of the largest utility demand response providers in the country and is pursuing a number of pilot programs

DTE Energy

2015 EIA Top 100 DR Programs – Peak Demand Savings (MW)



Pilot programs include

- "Bring Your Own Thermostat"
- Commercial Building Automation

Conclusion

- The electric power sector is undergoing transformational change
- As part of that change, states and companies including Michigan and DTE Energy are taking actions to provide electricity from cleaner electric generation sources
- DTE Electric is transforming its generation fleet and has pledged to reduce carbon emissions by 80% by 2050
- Additionally, DTE Electric will continue to exceed its energy efficiency program goals; work with the City of Detroit and the State of Michigan on innovative energy efficiency programs; and expand demand response programs

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