DECEMBER 12, 2012

ISO on Background

Energy-efficiency forecast

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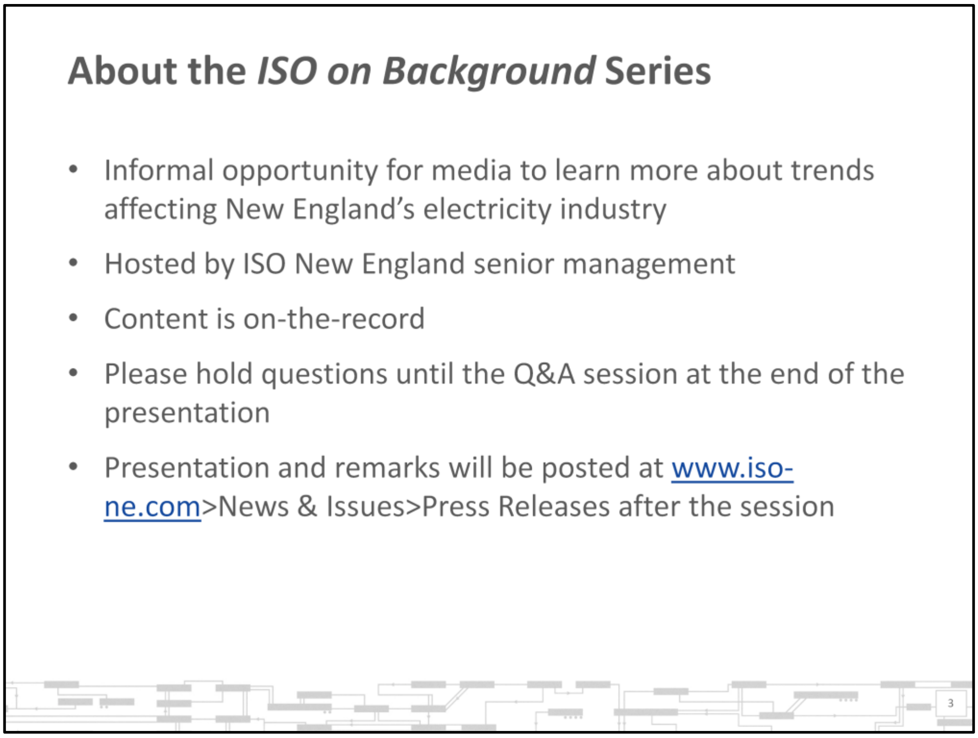
Agenda

11:00-11:05 a.m.	**Welcome and Introductions** Ellen Foley, Director, Corporate Communications
11:05-11:10 a.m.	**About ISO New England** Anne C. George, Vice President, External Affairs and Corporate Communications
11:10-11:40 a.m.	**ISO New England's Energy-Efficiency Forecast** Stephen J. Rourke, Vice President, System Planning
11:40 a.m.-12:00 p.m.	**Question-and-Answer Session**



This is the sixth *ISO on Background* session. We hold these informational briefings periodically to provide members of the media with an informal opportunity to learn more about the trends affecting New England's electricity industry and ISO New England's role in the region. Although we are calling these sessions *ISO on Background,* these are on-the-record conversations, and all content is attributable to the speaker.

We know that your time is precious, so to be sure that we get through the material in the scheduled time, we'll hold questions until the Q&A session at the end of the presentation.

The presentation and remarks will be posted on the ISO New England website, in the press release section, after this session is concluded.

Now Anne George, vice president of external affairs and communications, will provide an overview of ISO New England and the role of energy efficiency in New England, followed by Steve Rourke, vice president of system planning, who will discuss our new energy-efficiency forecast.

About ISO New England

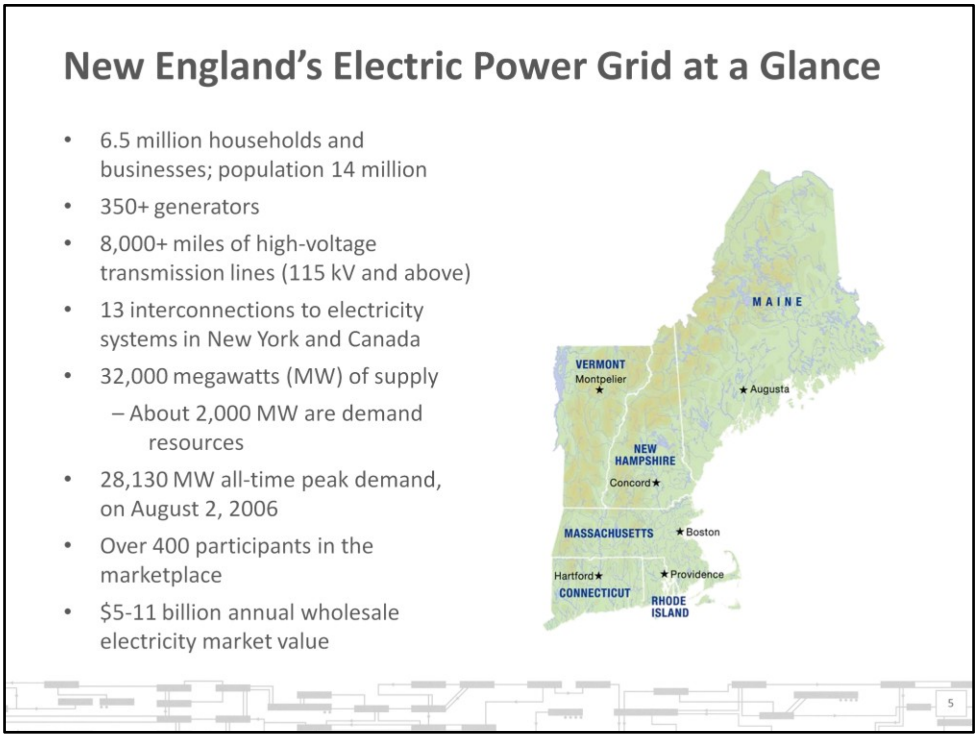
- Not-for-profit corporation
  - Created in 1997 to oversee New England's restructured electric power system; regulated by Federal Energy Regulatory Commission
- Regional Transmission Organization
  - Independent of companies doing business in markets; no financial interest in companies participating in markets
- Major responsibilities
  - Maintain reliable operation of the electric grid
  - Administer wholesale electricity markets
  - Plan for future system needs

Good afternoon, I'm Anne George.

ISO New England, headquartered in western Massachusetts, is the independent, not-for-profit corporation established by the federal government in 1997 to handle three important tasks:

First, the ISO operates the high voltage electricity system across New England; second, we run the wholesale electricity markets to ensure they are fair and competitive; and third, we conduct long-range power system planning.

A hallmark of the ISO's independence is the fact that employees and management can have no financial interest in any of the companies doing business in the markets.

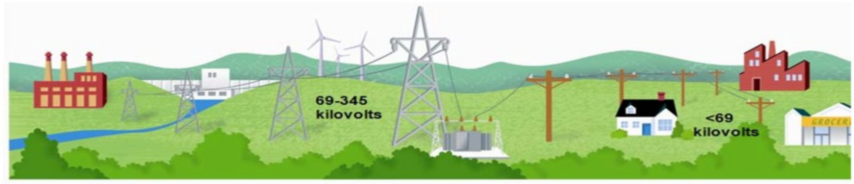


The six-state regional power system that we oversee is tightly interconnected, with more than 350 generators and 8,000 miles of high-voltage transmission lines. New England has more than 32,000 megawatts of capacity, and more than 2,000 megawatts of demand-side resources.

Demand-side resources include active measures, such as demand-response resources that agree to throttle back their electricity use when we call on them to do so, and passive resources, such as energy-efficiency measures that reduce overall energy consumption.

New England's power system is tied to the neighboring power grids in New York and Canada through 13 different interconnections that allow us to import and export electricity among the regions.

Wholesale to Retail Connection

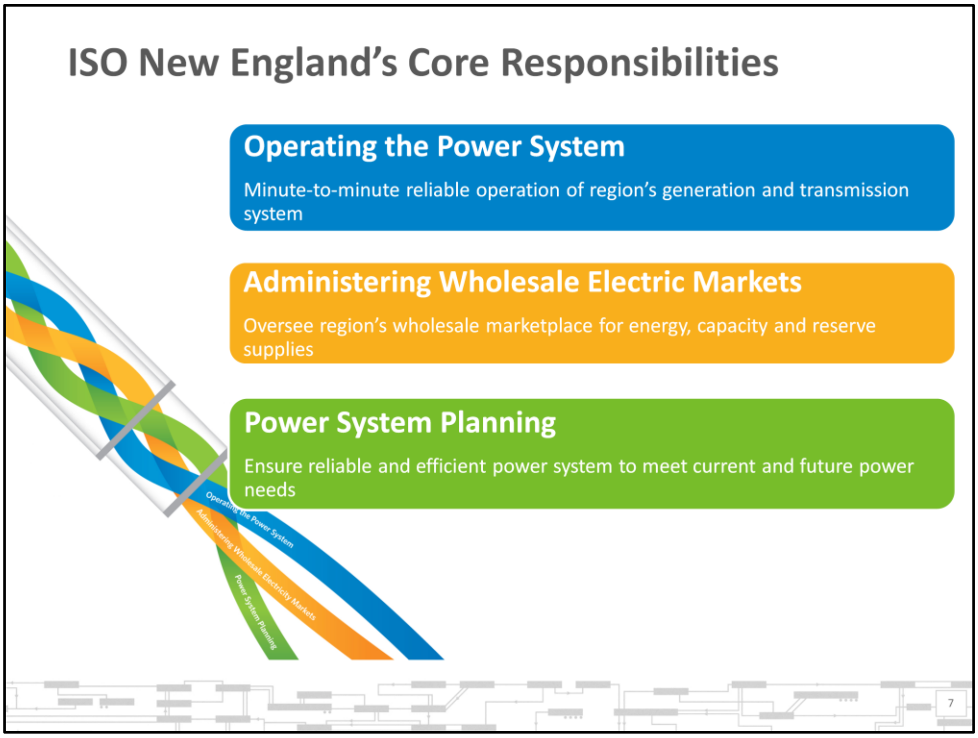


- **Bulk Power System**
  - Electricity is produced in New England by more than 350 generators dispatched by ISO-NE
  - Generators sell the electricity through either wholesale markets managed by ISO-NE or contracts with utilities and competitive suppliers
  - Region's high-voltage transmission lines move power to substations where it is stepped down in voltage to feed into local distribution lines
  - Federal regulation (FERC)
- **Local Distribution System**
  - Region's 6.5 million households and businesses create demand for electricity
  - Electric utilities and competitive suppliers buy electricity through markets or contracts with generators
  - Local utilities distribute the electricity to businesses and homes over lower-voltage lines
  - Customers' bills include both wholesale and retail costs of producing and delivering electricity
  - State regulation (public utilities commissions)

This slide highlights the key differences between the wholesale and retail sides of the industry in New England, and where they intersect.

The wholesale side is where electricity is bought and sold, then generated and sent over high-voltage transmission lines to the localities where it will be consumed. The wholesale side, where ISO New England operates, is regulated by the Federal Energy Regulatory Commission.

The retail side is where the high-voltage electricity is stepped down to a lower voltage so it can be delivered to consumers via the wires running along streets and roads. Retail customers get their bills from local utilities, and those bills combine wholesale and retail costs in rates set by state regulators.



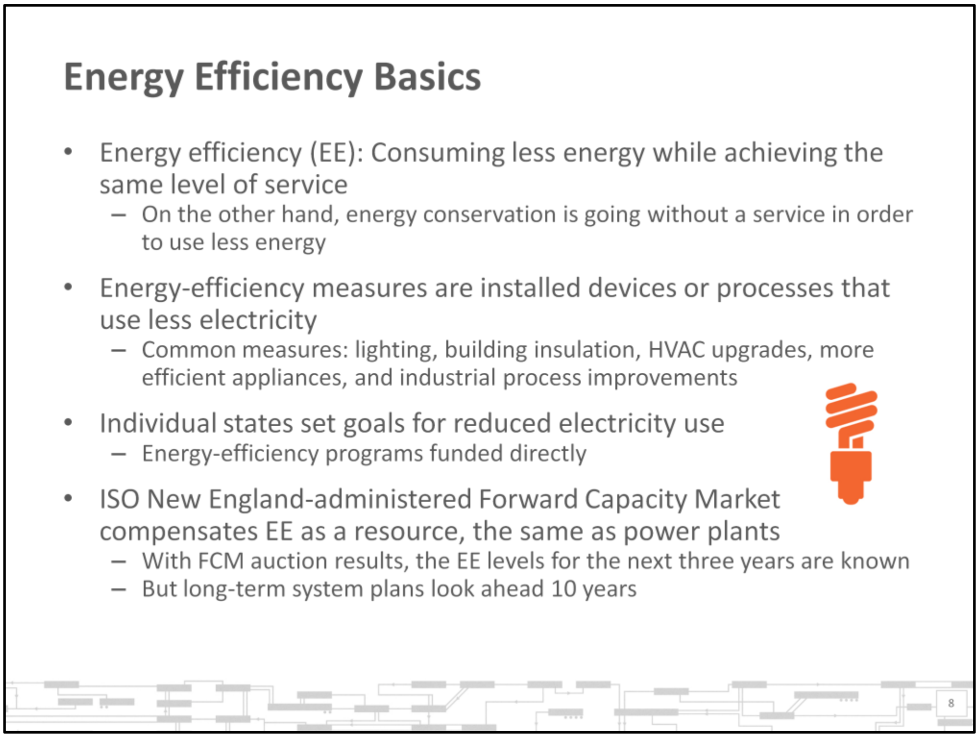
To explain where the ISO fits into the electricity industry landscape in New England, I'll describe our three primary responsibilities in a little more detail:

First, we manage the daily operation of the regional power grid. While the ISO does not own any transmission or distribution lines or power plants, you can think of us as the air traffic controller that directs power across New England so that it goes where it is needed, when it is needed.

Another one of our functions is to administer the wholesale electricity markets, somewhat like a stock exchange. We do not have any financial stake in these markets and the ISO itself does not buy or sell electricity; we run the markets so that they are fair, efficient, and competitive.

Third, to ensure that we have the resources in place to serve future power system and consumer needs, we have a comprehensive planning process that looks ten years into the future.

Today, you'll hear about how, as part of its long-range planning responsibilities, the ISO has been able to develop a 10-year forecast that projects how much electric energy will be saved with the energy-efficiency measures installed by New England's state-sponsored programs.



Let me go over some basic concepts before I turn this over to Steve to delve into the forecast itself.

When we talk about energy efficiency, we're referring to measures or devices that use less energy while providing the same level of service. A common example would be an LED light bulb that gives off the same amount of light as a conventional bulb, but uses less energy to do so. On the other hand, energy conservation is different. An example would be turning off the light bulb in order to use less electricity.

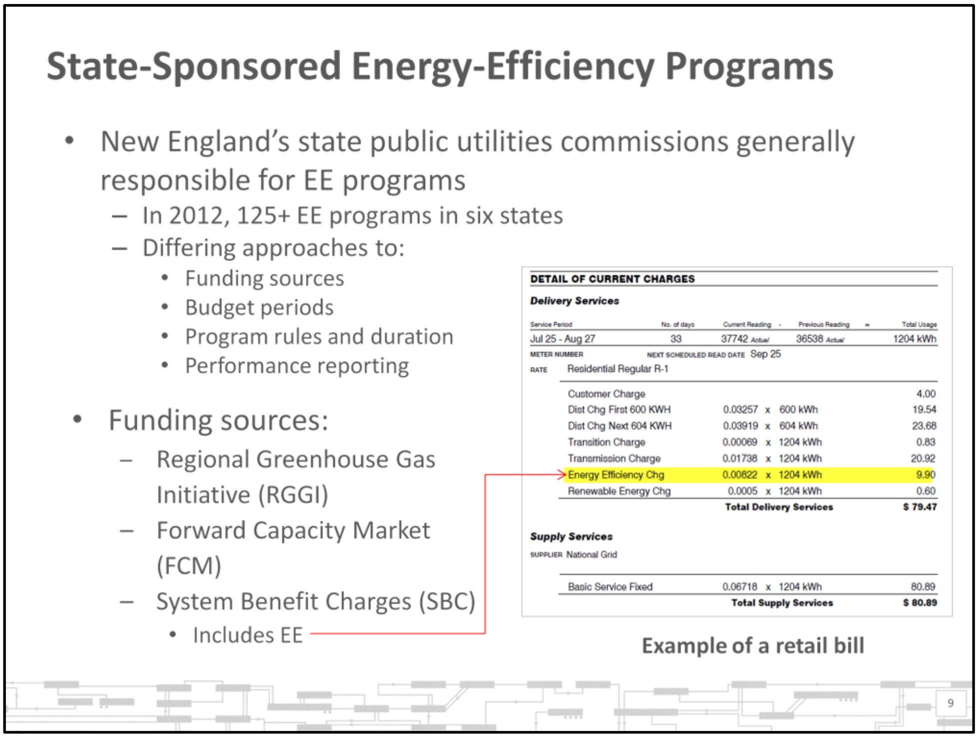
We'll be referring to energy efficiency as EE most of the time today.

Energy-efficient lighting, such as compact fluorescent and LED bulbs, has provided most of the energy-efficiency savings in New England to date. Examples of other common energy-efficiency measures or processes include ENERGY STAR© appliances, upgrades to heating, ventilation and air conditioning equipment, industrial process improvements, building insulation, and more efficient industrial motors.

The New England states, which regulate the retail electricity industry, are committed to reducing electricity use and have a long history, going back to the early 1980s, of creating and funding EE programs to reach their energy-efficiency targets. These state-sponsored programs provide incentives to residents and businesses to buy and install more efficient devices and equipment, and they help businesses implement processes that use less electricity.

On the wholesale side, ISO New England administers several markets, including a capacity market that provides compensation not only to generators that commit to produce electricity when needed, but also to resources that commit to reduce electric energy consumption, including energy-efficiency resources. However, the ISO does not require states or utilities to implement EE programs.

Having an accurate long-term load forecast is critical as we work to identify the power system improvements necessary to meet future demand for electricity. Steve will explain a little more about the relationship between the Forward Capacity Market and the energy-efficiency forecast.



Generally, state public utility commissions in New England oversee EE programs. Electric utilities often serve as program administrators and manage the state-sponsored EE programs, although Maine and Vermont have created separate entities to provide EE services.

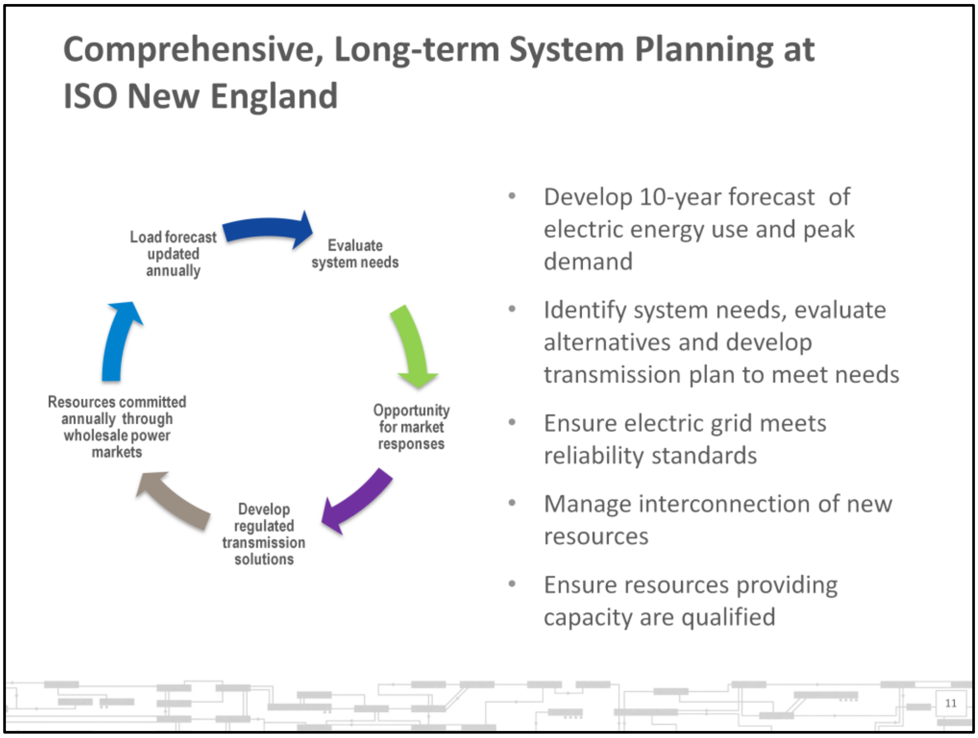
In 2010, the six states sponsored more than 125 individual EE programs. These programs provide financial incentives to promote the replacement of inefficient electrical devices or processes and also fund the cost difference between standard-efficiency and higher-efficiency devices in new construction.

The primary funding sources for these EE programs are the "system benefits charge" on ratepayers' bills, revenues from Regional Greenhouse Gas Initiative auctions, revenues from the region's Forward Capacity Market, and amounts included in state budgets to support policy directives. Each state has a different funding approach, including funding sources, budget periods, and program duration.

Now that I've sketched out the EE landscape in New England, Steve Rourke, vice president of system planning at ISO New England, will tell you more about the region's first energy-efficiency forecast.

ENERGY-EFFICIENCY FORECAST

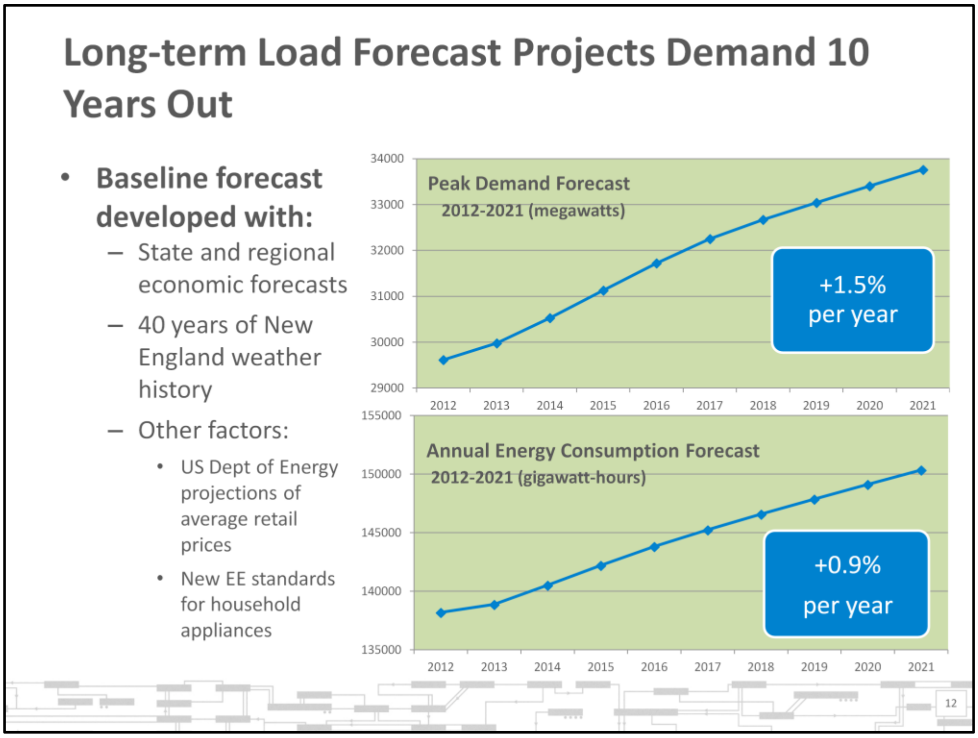
Background



Hi, I'm Steve Rourke. I oversee system planning at ISO New England. Power system planning covers a wide range of responsibilities and activities, but today we'll focus on the long-range forecast that estimates how much electric energy will be consumed, and what peak demand will be, for each of the next 10 years.

We'll discuss ISO New England's energy-efficiency forecast, which is the first multi-state energy-efficiency forecast in the nation. We'll cover load forecasting generally and the drivers behind development of the energy-efficiency forecast, take a look at the results, and then take questions.

When we talk about energy-efficiency savings, we are talking about the lower electricity use, or savings, due to energy-efficiency measures.



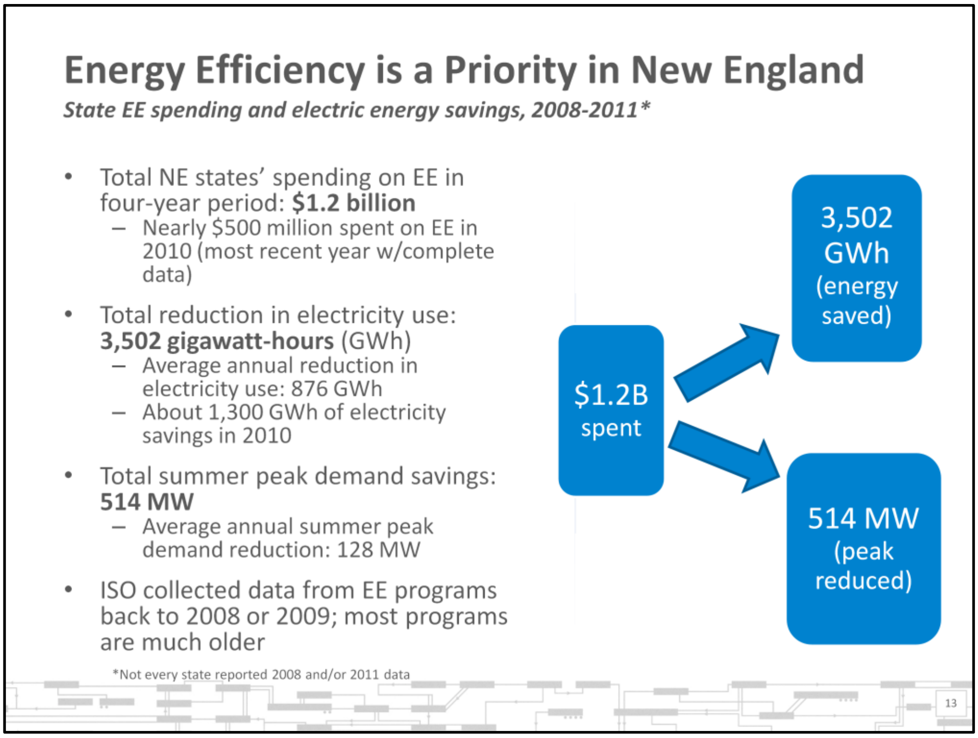
As Anne mentioned, accurate long-term load forecasting is essential for long-term system planning.

The ISO uses state and regional economic forecasts, 40 years of weather history in New England—because weather is one of the biggest drivers of electricity usage—and other factors, to forecast how much electricity the region's residents and businesses will use over the course of each year for the next 10 years. We also forecast the highest point at which demand will peak in each of the next 10 years.

Peak demand refers to the hour in each year when the most amount of electricity is used. The region's power system must have the ability to meet peak demand, and the ISO plans the power system to be able to meet peak demand.

This year, our baseline long-term load forecast indicates summer peak demand will grow by an average of 1.5% annually through 2021 and annual electricity consumption will grow by an average of 0.9% annually.

We're telling you about these baseline forecasts here because these are the starting points from which we subtract the region's energy-efficiency savings.



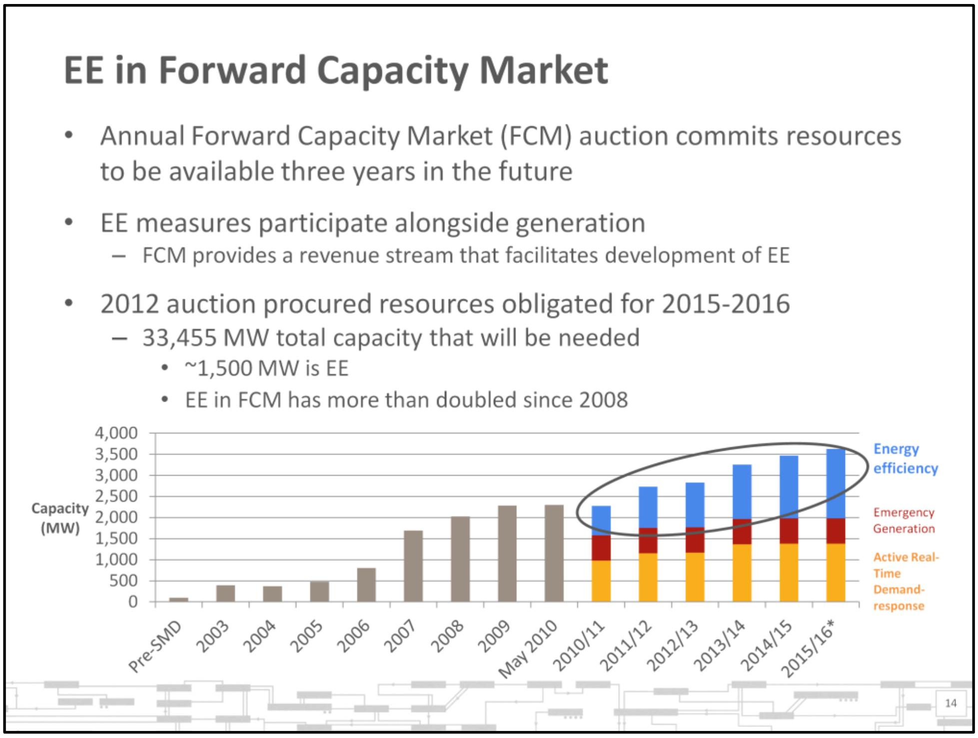
Each of the six New England states has made energy efficiency a significant part of its energy policy. In fact, about $1.2 billion was spent on these EE programs from 2008 to 2011, according to data we collected from state-sponsored programs.

As a result of that spending, the average reduction in annual electricity consumption was about 875 gigawatt-hours. For context, the region used about 130,000 gigawatt-hours of electricity last year.

And the average annual reduction in summer peak demand was 128 megawatts. The all-time record for peak demand in New England was 28,130 megawatts, which occurred on August 3, 2006, during a heat wave.

This information is based on historical data from the states and program administrators on their EE programs, going back to 2008 or 2009. Most New England state-sponsored EE programs are much older, but the programs have grown significantly over this recent timeframe. Not every state was able to provide data for 2008 and/or 2011; as a result, the regional averages for the four-year period are a bit lower than they would be if the years with incomplete information were excluded.

To give you some context for these savings, one megawatt can serve about 1,000 average homes in New England, so one megawatt-hour serves about 1,000 homes for one hour. One gigawatt-hour can serve about 1 million homes for one hour.



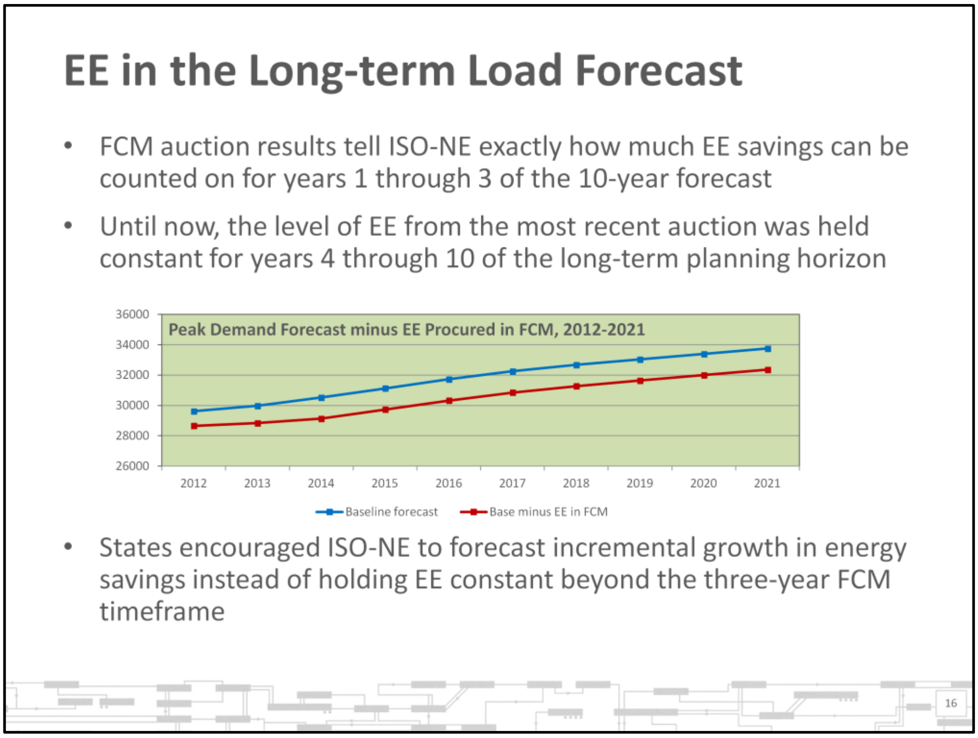
The impact of New England's state-sponsored EE programs can be seen in the Forward Capacity Market that we mentioned a few minutes ago. Almost all of the EE in state-sponsored programs is participating in this market.

On the wholesale side, the Forward Capacity Market includes an annual auction to procure commitments from generators and demand-side resources to be available three years from now. The auction is designed to ensure the region has the level of resources we estimate will be needed in three years' time to meet demand.

Since 2008, when the first auction was held, the amount of energy efficiency in this market has more than doubled. The 2012 auction procured about 1,500 megawatts of EE that is obligated to be available in 2015-2016. That's almost 5% of the 34,000 MW our studies show will be needed to meet peak demand in 2015-2016.

ENERGY-EFFICIENCY FORECAST

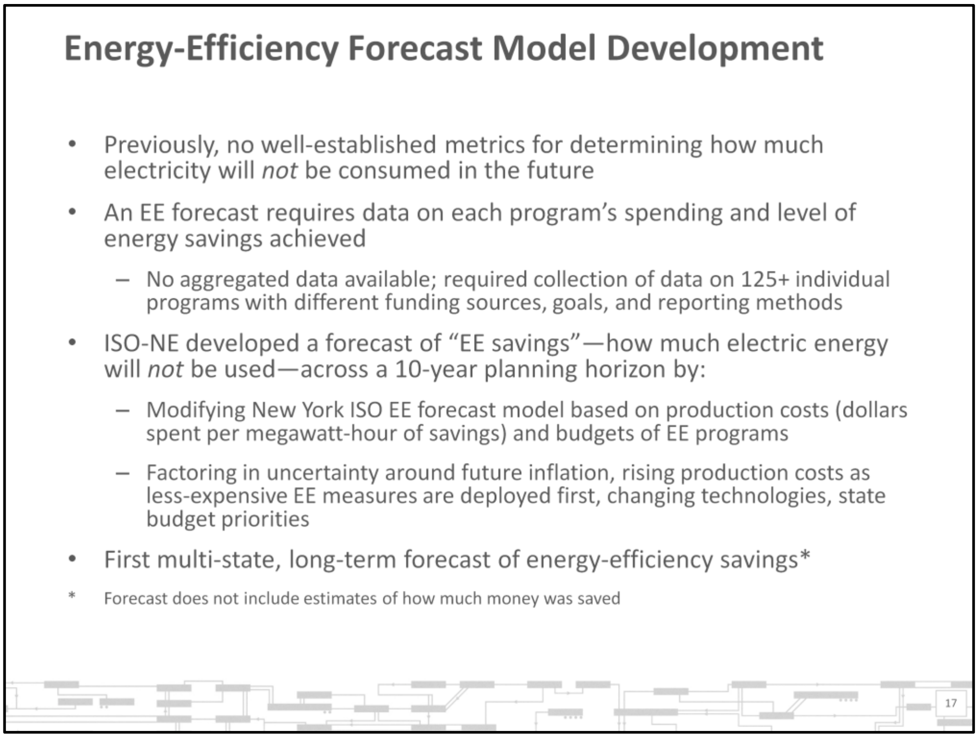
Development



Based on the results of the Forward Capacity Market auctions, we know how much energy efficiency we can count on for each of the next three years, but beyond the third year—years 4 through 10 of our long-term planning horizon—the magnitude of the energy savings, and the effect on overall demand, had not been fully quantified.

Without a way to accurately estimate how much EE would materialize in those later years, the amount of EE procured in the most recent FCM auction was held constant for years 4 through 10 of the 10-year load forecast. The red line in this chart shows how the baseline forecast is reduced when the energy-efficiency savings acquired in the Forward Capacity Market are subtracted for 2012 to 2015, and how the amount acquired for 2015 is held at the same level through 2021.

The New England states and other regional stakeholders encouraged the ISO to quantify the growing impact of EE beyond the three-year FCM horizon, so we embarked on a project to figure out how we could forecast future energy-efficiency savings accurately enough to rely on the results in long-term system planning.



When we started this project, there was no well-established model that was commonly used to predict how electricity savings from EE measures would change over the long term. We found that the New York ISO was the only grid operator forecasting EE in its long-term load forecast, and had been doing so for only a few years.

The ISO concluded that we could develop an accurate EE forecast by modifying New York's single-state production cost model to incorporate data on the more than 125 individual programs in six states with differing priorities, funding approaches, rules, and methods for reporting EE performance.

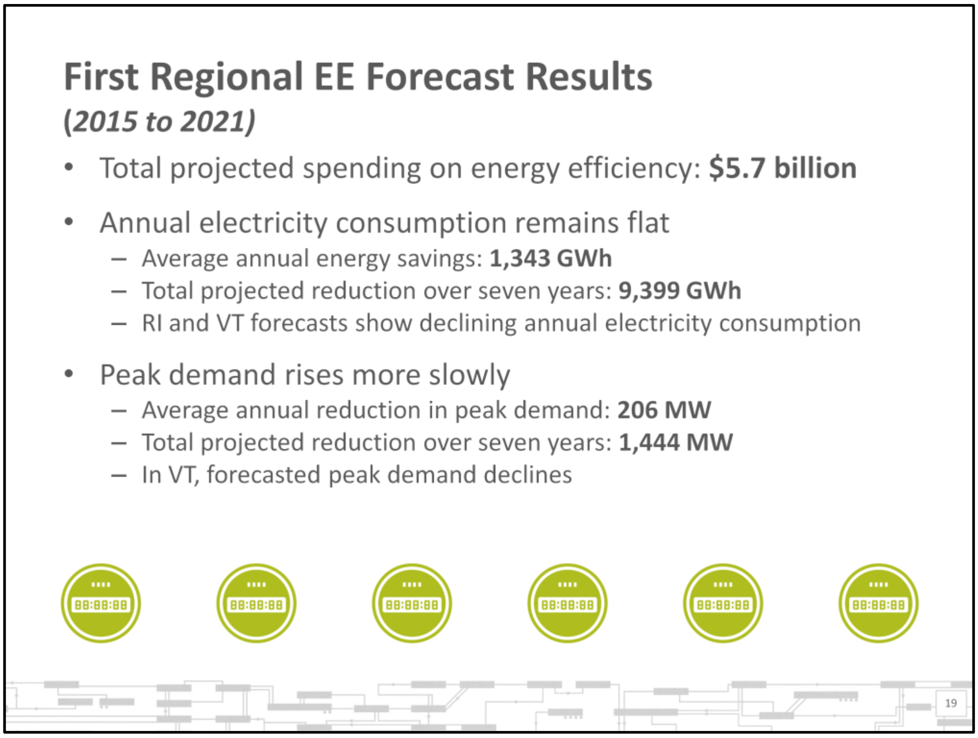
In its simplest terms, ISO New England's model divides projected EE budgets by the cost per megawatt-hour of savings to establish how much electricity use will be avoided in years four through 10 of the long-term forecast, beyond the FCM horizon. The ISO's model also factors in the uncertainty associated with the future -- future budgets, inflation, production costs, and changing technology. The model also shows production costs rising as less-expensive EE measures are widely implemented and programs turn to more expensive measures to achieve similar levels of energy savings.

This is the first long-term forecast that calculates the savings that can be expected from state-sponsored energy-efficiency programs in more than one state.

I should note that the ISO did not attempt to estimate how much money may be saved by consumers using more efficient devices and processes, nor have we analyzed the efficacy of the existing, state-sponsored EE programs. The ISO's focus is on developing an accurate forecast that can be used in transmission planning. Individual states may have cost-benefit analyses for the programs they're sponsoring.

ENERGY-EFFICIENCY FORECAST

Regional Results

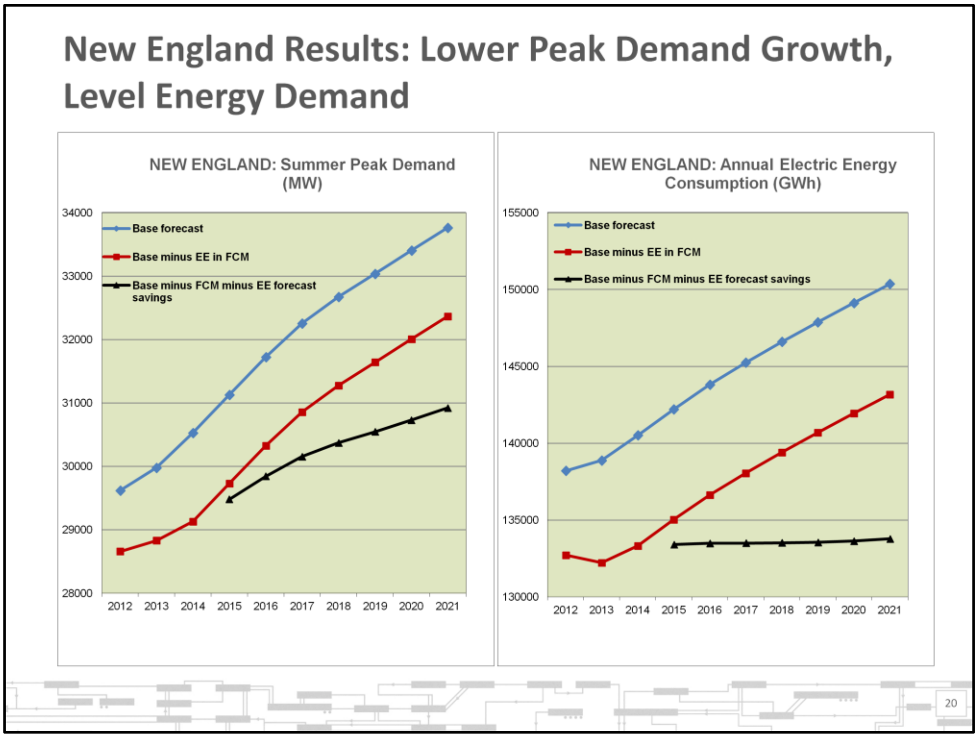


Finalized earlier this year, this first energy-efficiency forecast estimates that the six New England states will spend a combined $5.7 billion on energy-efficiency measures from 2015 through 2021. The forecast shows that the investment will produce substantial reductions in total annual electricity consumption and in peak demand, both regionally and in each state.

For the region as a whole, the EE forecast shows an average annual reduction in electricity consumption of 1,343 gigawatt-hours (GWh), which equates to the energy that would have been used in nearly 2 million average homes for a month. Saving 1,343 gigawatt-hours a year would cut about 1% off the current 130,000 gigawatt-hours of electricity consumed annually in New England.

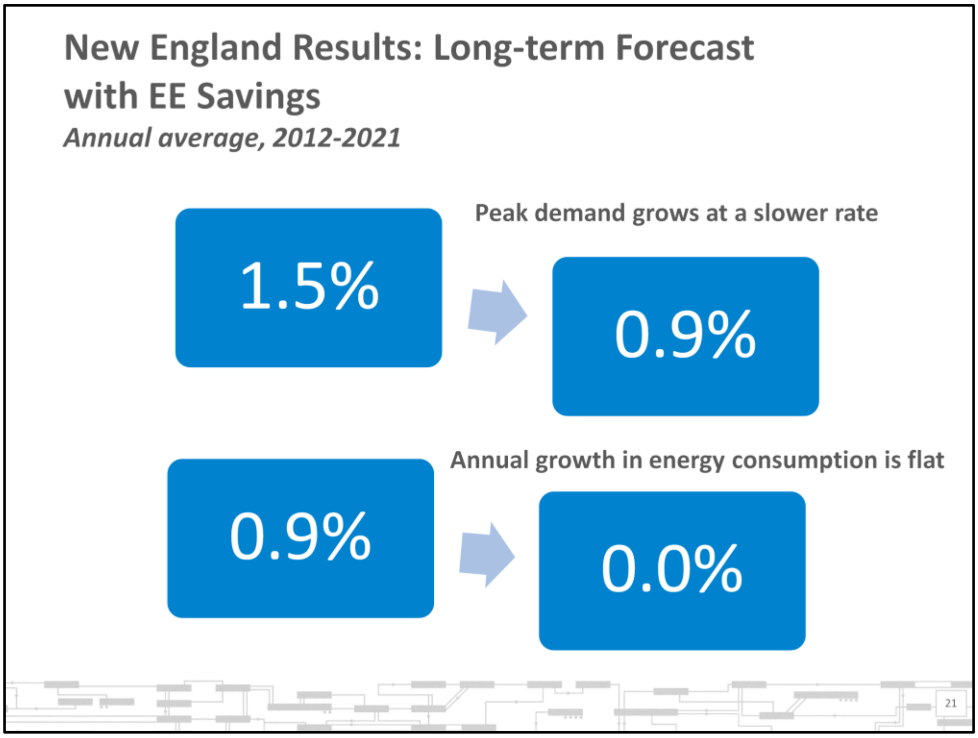
The forecast also estimated peak demand reductions at an average of 206 megawatts per year for the region.

Rhode Island and Vermont show average annual electricity consumption declining, and the forecast projects that peak demand in Vermont will also decline.



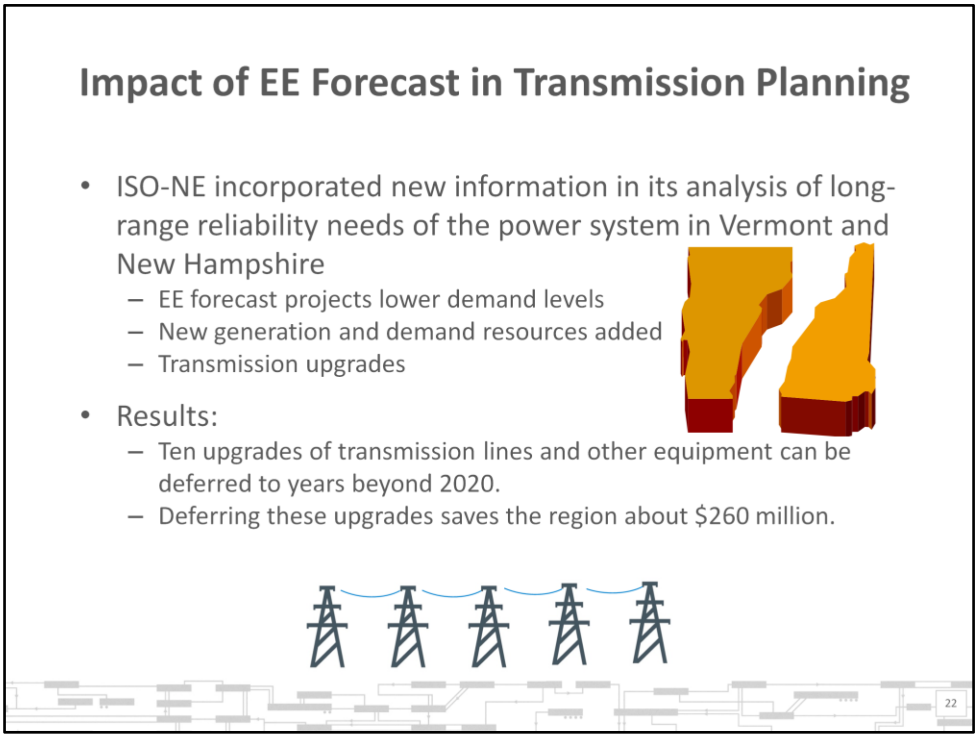
These graphics illustrate the impact of the energy-efficiency forecast on both the peak demand forecast and the long-term load forecast for the region as a whole.

The blue line in both charts is the baseline load forecast. Again, this is how peak demand and energy consumption would trend if NO EE savings were taken into account. The red line reflects the energy-efficiency savings that have been acquired through the Forward Capacity Market for the next three years; in this forecast, the amount of energy savings from the FCM is held constant after the third year. And the black line shows the results of the energy-efficiency forecast: increasing amounts of energy-efficiency savings, which reduces the long-term forecast for both annual electricity consumption and peak demand.



Earlier, I told you our baseline forecast calls for average annual growth of 1.5 percent in summer peak demand and 0.9 percent in annual electricity consumption. With the reduced usage projected in the EE forecast, those projections go down to just under 1 percent growth in summer peak demand and no growth at all in average annual energy consumption from 2012 to 2021.

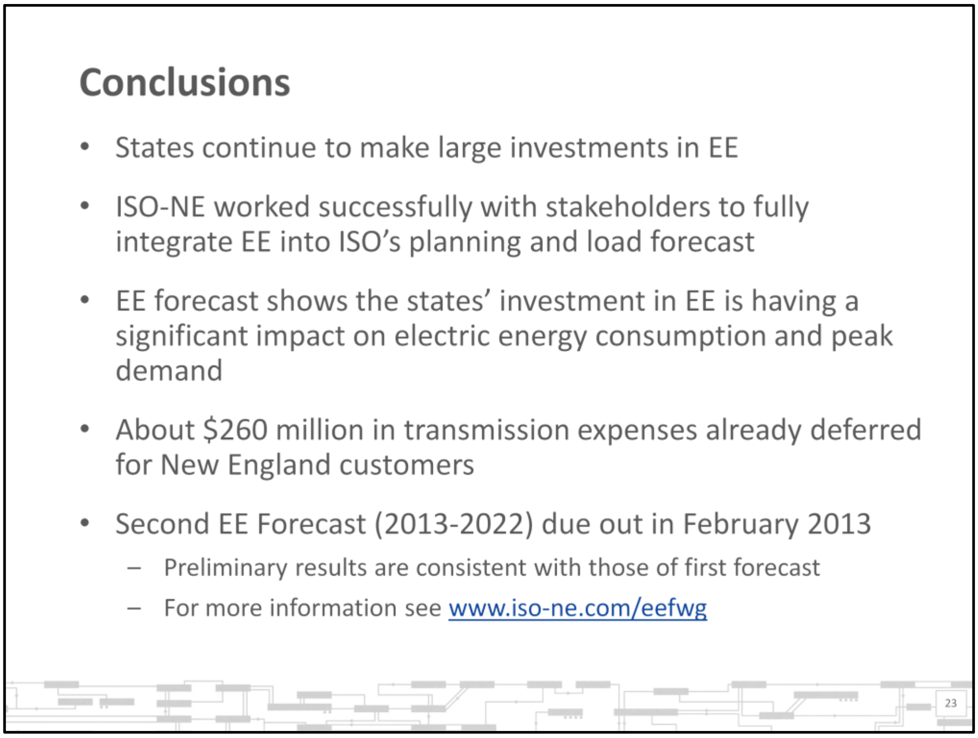
As a side note, our winter peak load has also been affected, as many early EE programs have been focused on lighting. So far, we've actually seen more peak reduction in the winter than in the summer. Our baseline forecast shows winter peak growing by an average of a half a percent annually over the next 10 years but when the results of the EE forecast are applied, our projection is that winter peak demand will decline by nearly half a percent.



The EE forecast is already having a significant effect on our transmission planning for the region.

We revised the ongoing study of the Vermont/New Hampshire area of the power grid by applying the projected energy-efficiency savings, along with some new resources and recently completed equipment upgrades. The revised analysis shows that the region can actually defer 10 transmission upgrades that earlier studies showed were needed to ensure system reliability. By deferring these upgrades, the region will save an estimated $260 million.

Now that it's in place, ISO New England is applying the findings from the long-term EE forecast to studies looking beyond the three-year FCM timeframe, including other long-term transmission needs assessments and solutions studies around the region.



To sum up, the New England states continue to make large investments in EE, resulting in significant reductions in annual electricity consumption and peak demand. The EE forecast has shown that with these reductions, some transmission upgrades that we thought would be needed to ensure reliability can be deferred, and future analyses may show that some upgrades in other areas of the grid can be deferred as well.

We're currently working on our second EE Forecast for 2016 to 2022, which is due out in February. The preliminary results are consistent with those of the first forecast, showing similar energy and peak demand savings.

The ISO continues to work closely with stakeholders in our Energy Efficiency Forecast Working Group, and you can find more information and materials on the forecast on our website.

For your information, we've compiled data and EE forecast results for each of the six New England states, which we'll post on the press release page of our website, at iso-ne.com, at the conclusion of this session.

For more information:

- ISO Newswire, our online newsletter
  www.isonewswire.com
- ISO Express data portal
  http://isoexpress.iso-ne.com/guest-hub
- ISO to Go mobile app
  - For iPhone and Android

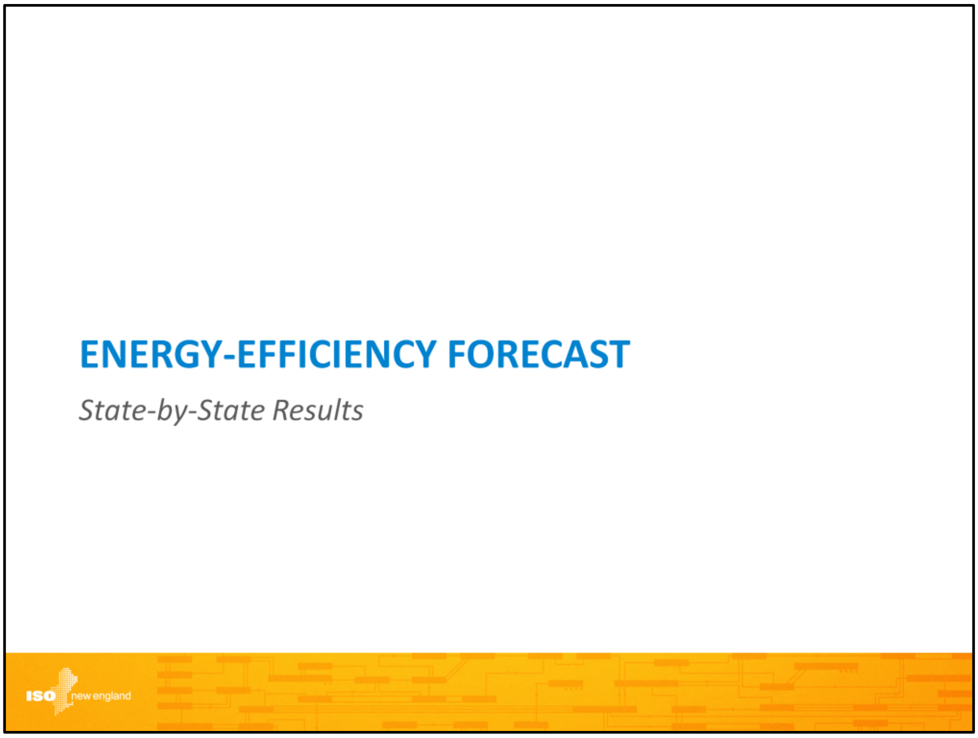
  http://www.iso-ne.com/support/isotogo/
- @isonewengland on Twitter
  www.twitter.com/isonewengland
- ISO website
  www.iso-ne.com
- Northeast Energy Efficiency Partnerships
  http://neep.org/
- Database of State Incentives for Renewables & Efficiency
  http://www.dsireusa.org/

Now I'll turn it back over to Ellen to explain how you can submit questions through the WebEx system.

(ELLEN)
Now we will open it up for the Q&A session. We'll begin by answering questions that were submitted in writing via the Q&A tool. Remember that you can continue to submit questions through the Q&A tool during this question-and-answer session.

After that, we will answer questions from the phone. To ask a question verbally, please click the "raise hand" button on the right-hand side of the screen. We will call on individuals to pose their questions. When you are finished, please click the button again to lower the hand, so that we know you have no further questions.

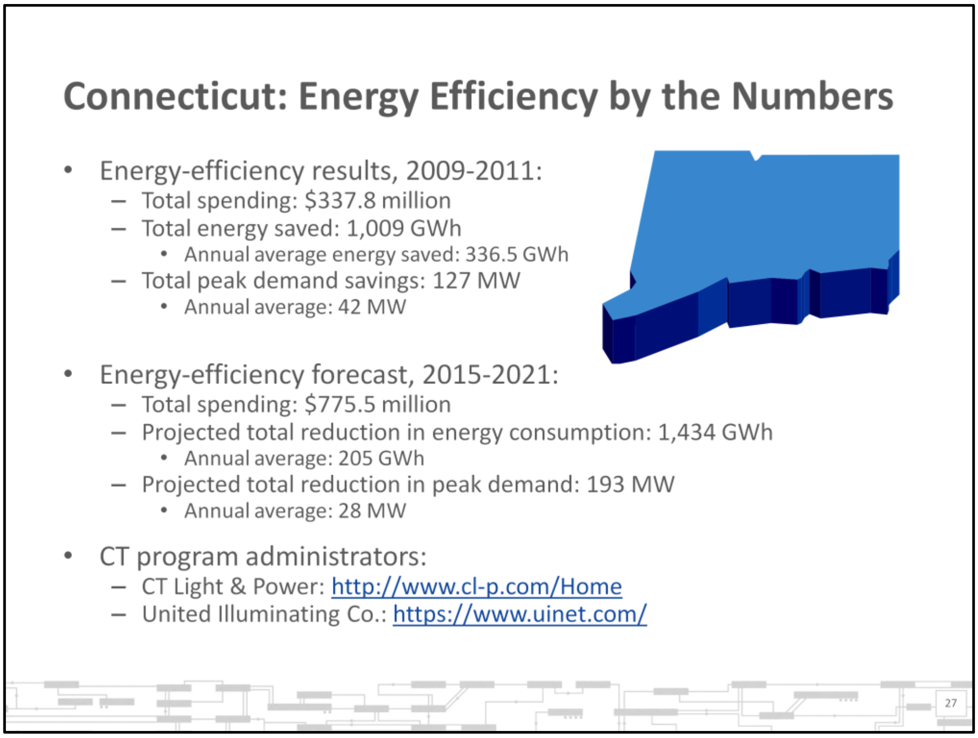
(Once all questions have been asked)
Are there any other questions from reporters who have joined us only by phone?



For each state, we've compiled EE forecast data, showing how much is projected to be spent, how much energy consumption is expected to be reduced, and how much peak demand is expected to be shaved, with charts illustrating each.

For each state, the first slide shows how much the state has already invested in EE in recent years and the associated savings, as well as the projected spending and savings for 2015 to 2021. The second slide gives a visual representation of the effect of EE on peak demand and total annual electricity consumption in each state.

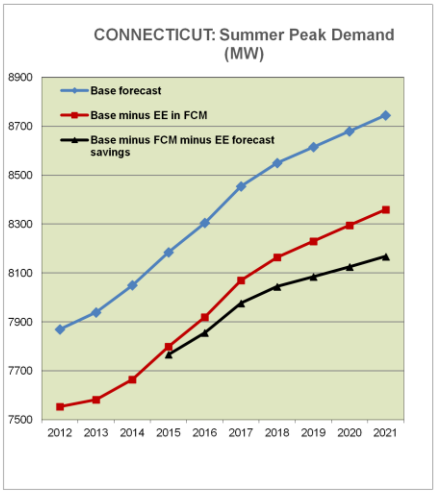
To find out more about a state's EE programs, you might want to contact the program administrators or the public utilities commission in the state.

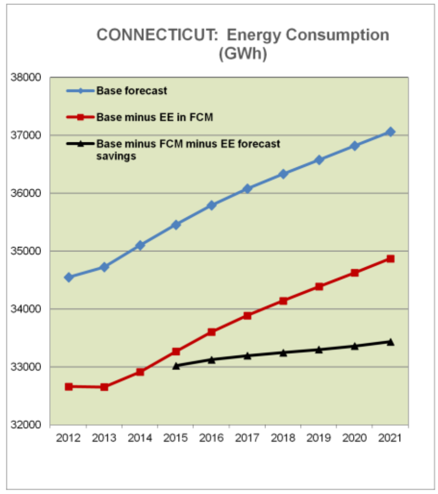


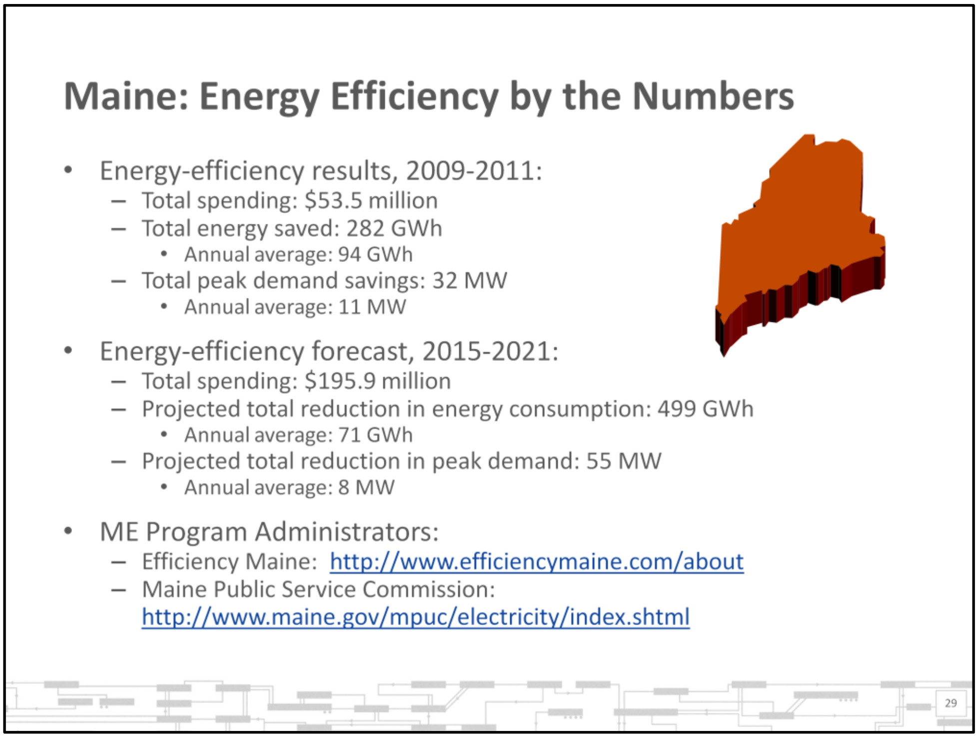
Connecticut has invested about $338 million in recent years in EE, saving about 336 gigawatt-hours of energy, on average, each year and shaving an average 42 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total $775 million, with an annual average reduction in energy consumption of 205 gigawatt-hours and an average reduction in peak demand of 28 MW.

Connecticut consumes about 25% of the region's electricity each year. The state's all-time peak demand was 7,532 MW, set in 2006.

Connecticut Peak and Annual Energy Consumption Forecast, 2012-2021



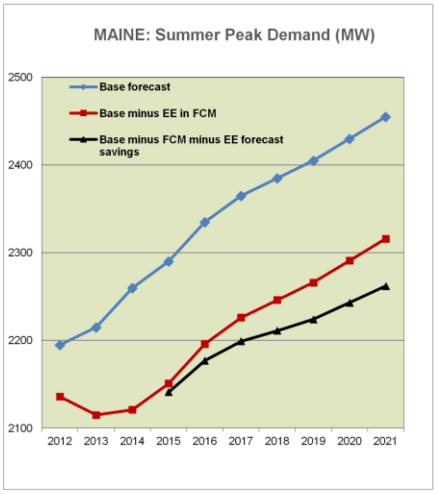


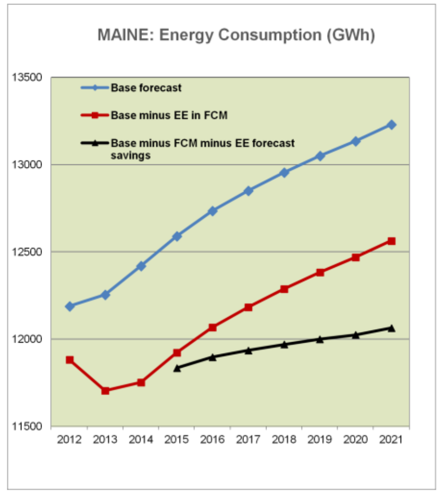


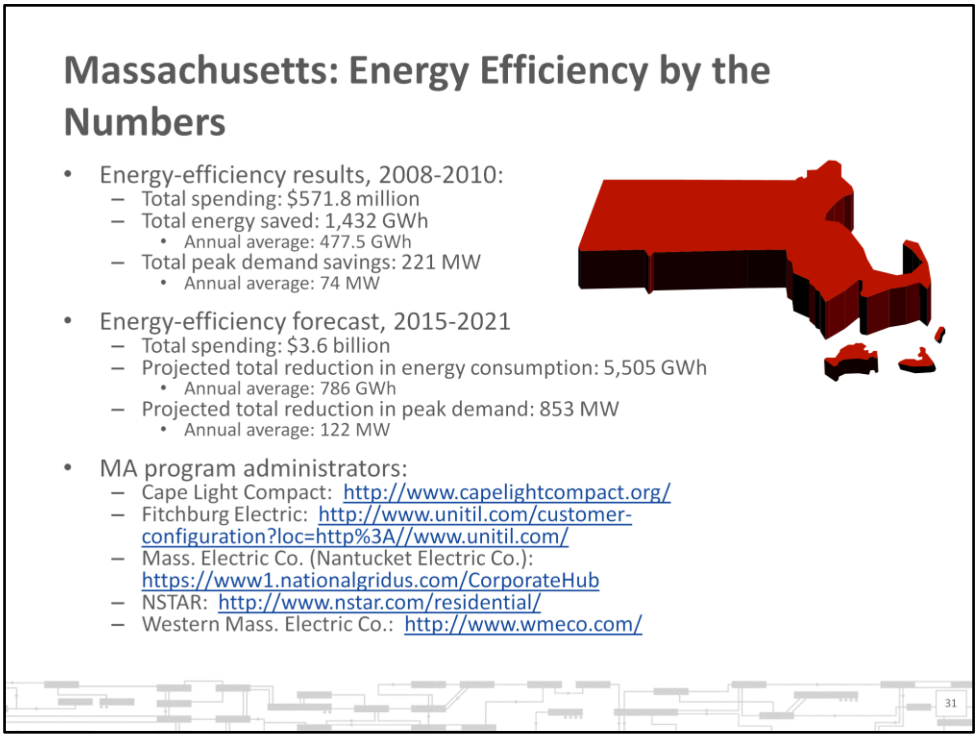
Maine has invested about $53 million in recent years in EE, saving about 282 gigawatt-hours of energy each year and shaving 11 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total $196 million, with an annual average reduction in energy consumption of 71 gigawatt-hours and an average reduction in peak demand of 8 MW.

Maine consumes about 8% of the region's electricity each year. The state's all-time peak demand was 2,075 MW, set in 2006.

Maine Peak and Annual Energy Consumption Forecast, 2012-2021



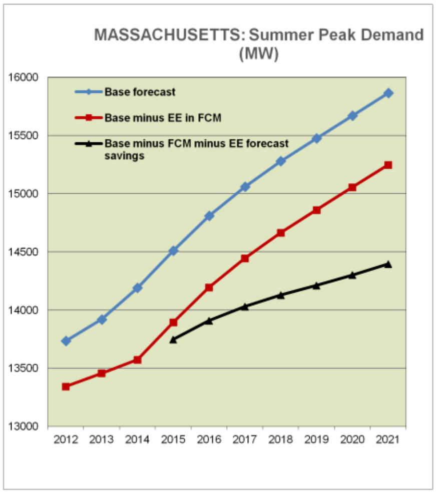


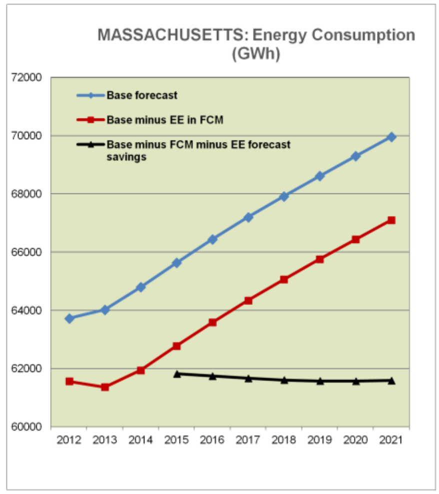


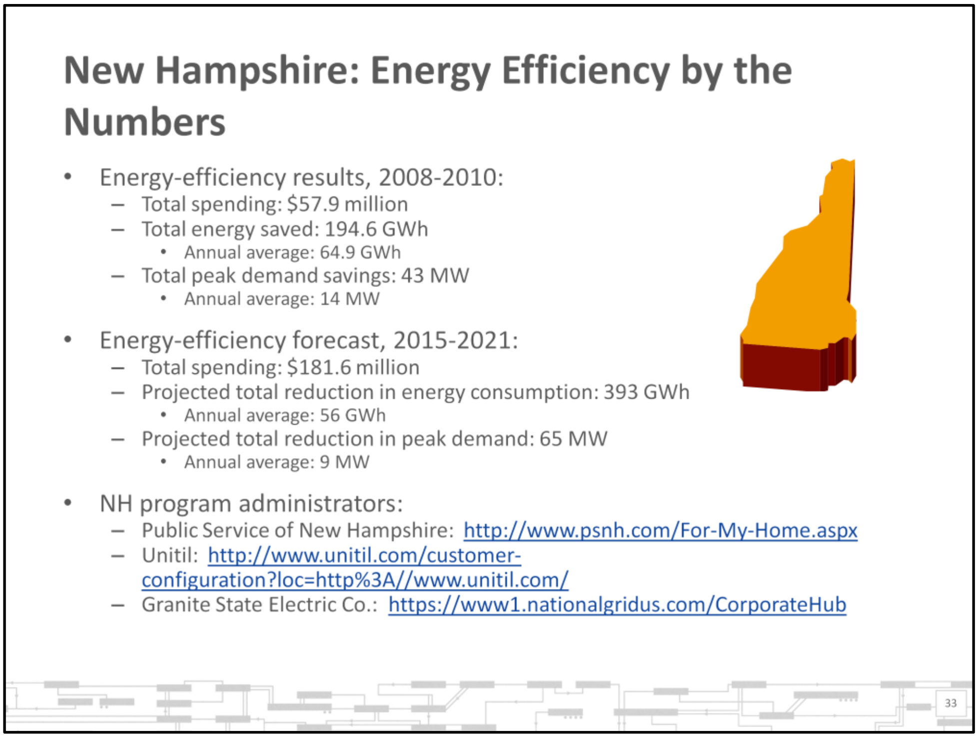
Massachusetts has invested about $572 million in recent years in EE, saving about 477 gigawatt-hours of energy each year and shaving 74 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total about $3.6 billion, with an annual average reduction in energy consumption of 786 gigawatt-hours and an average reduction in peak demand of 122 MW.

Massachusetts consumes about 46% of the region's electricity each year. The state's all-time peak demand was 13,296 MW, set in 2006.

Massachusetts Peak and Annual Energy Consumption Forecast, 2012-2021



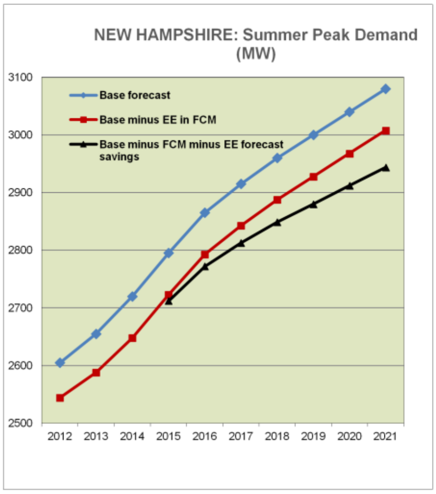


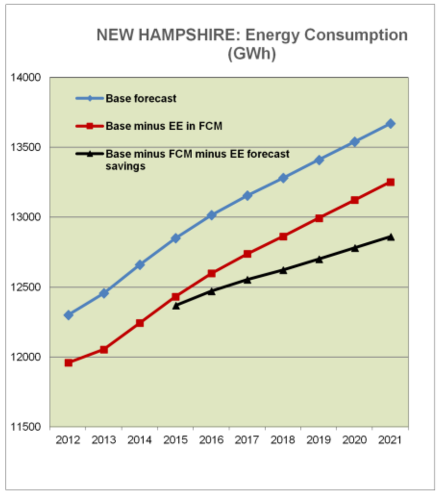


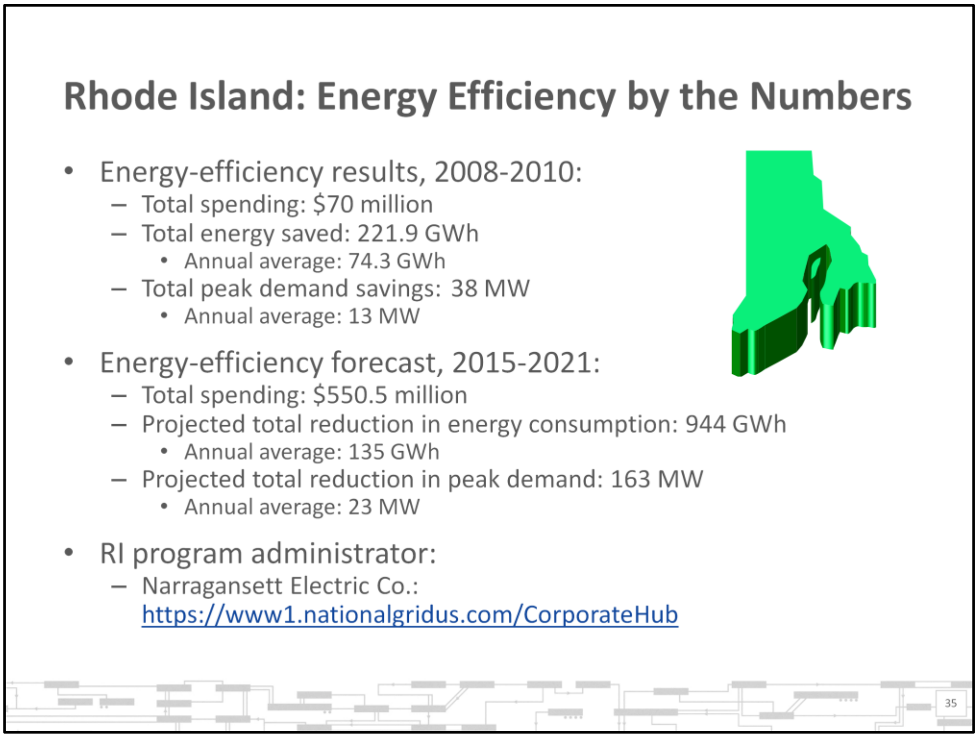
New Hampshire has invested about $58 million in recent years in EE, saving about 65 gigawatt-hours of energy each year and shaving 14 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total about $182 million, with an annual average reduction in energy consumption of 56 gigawatt-hours and an average reduction in peak demand of 9 MW.

New Hampshire consumes about 9% of the region's electricity each year. The state's all-time peak demand was 2,478 MW, set in 2006.

New Hampshire Peak and Annual Energy Consumption Forecast, 2012-2021



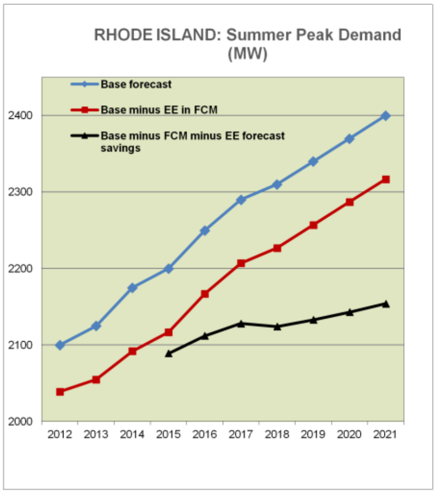


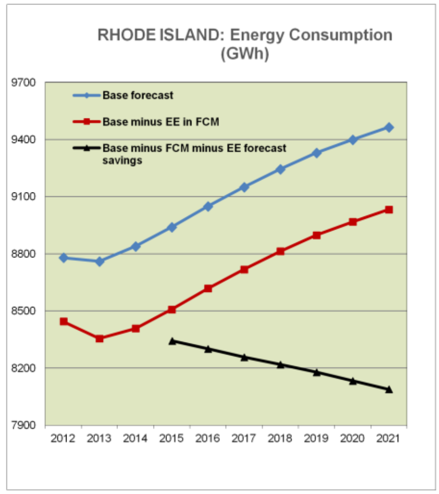


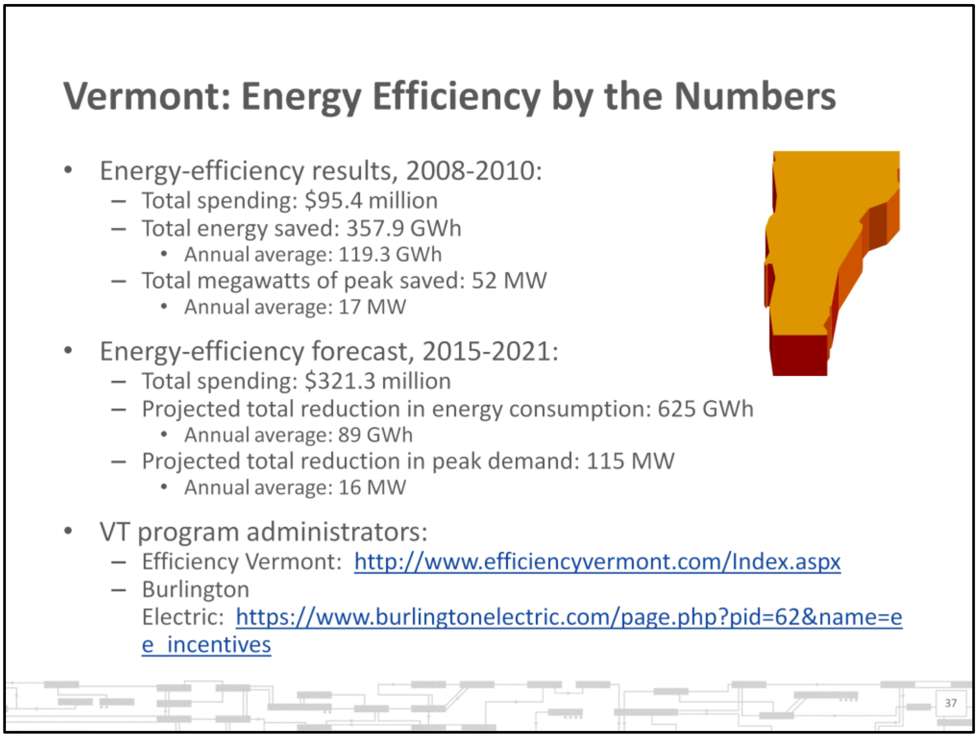
Rhode Island has invested about $70 million in recent years in EE, saving about 74 gigawatt-hours of energy each year and shaving 13 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total about $550 million, with an annual average reduction in energy consumption of 135 gigawatt-hours and an average reduction in peak demand of 23 MW.

Rhode Island consumes about 7% of the region's electricity each year. The state's all-time peak demand was 1,989 MW, set in 2006.

Rhode Island Peak and Annual Energy Consumption Forecast, 2012-2021







Vermont has invested about $95 million in recent years in EE, saving about 119 gigawatt-hours of energy each year and shaving 17 megawatts off peak demand. Between 2015 and 2021, spending on state-sponsored programs will total about $321 million, with an annual average reduction in energy consumption of 89 gigawatt-hours and an average reduction in peak demand of 16 MW.

Vermont consumes about 4% of the region's electricity each year. The state's all-time peak demand was 1,094 MW, in 2006.

Vermont Peak and Annual Energy Consumption Forecast, 2012-2021