nationalgrid DOING RIGHT NOW investorday

New England

Transforming our networks

Stephen Woerner
President, National Grid NE

Carol Sedewitz
Vice President, Electric Asset Management & Engineering

Good afternoon and welcome to breakout session on New England.

I'm Steve Woerner, President, National Grid NE.

Excited to join National Grid following 31 years at BGE, Constellation and Exelon including serving as COO for the past 9 years and President for the past 7 years.

I am particularly excited to be part of an energy company with operations in regions that are on the forefront of addressing climate change.

I feel my deep utility experience and track record of achieving excellence in operational performance will be an asset.

I am particularly excited to be part of an energy company with operations in regions that are on the forefront of addressing climate change.

I am very interested in partnering with the state, region, our customers and communities to safely, equitably and economically address the challenges of addressing climate change.

I'm joined today by Carol Sedewitz, VP of Electric Asset Management & Engineering, New England.

Overview of breakout

As you heard from John and Andy, the Group is focused on 3 points:

- Driving efficiencies;
- Delivering strong growth; and
- Being at the heart of the energy transition in all the jurisdictions where we operate.

So, please join me in walking through to the main presentation where we will walk through these 3 points and outline the excellent work we are doing right now, and the exciting investment opportunities we have to drive the business forward.

Before we discuss our efficiency program, our growth forecast and being at the heart of the energy transition, I want to set the scene of our going forward New England business:

- We are 35% of the Group's total US asset base, and own 11,000 miles of pipe and 21,000 miles of wire

National Grid New England
35%
of the NGUSA business

11,000 miles
of pipeline

21,000 miles
of electric lines

- We serve over 2 million customers; and we also own a Transmission business; and
- We invest over $1 billion capex each year, and have a rate base of almost $9 billion .

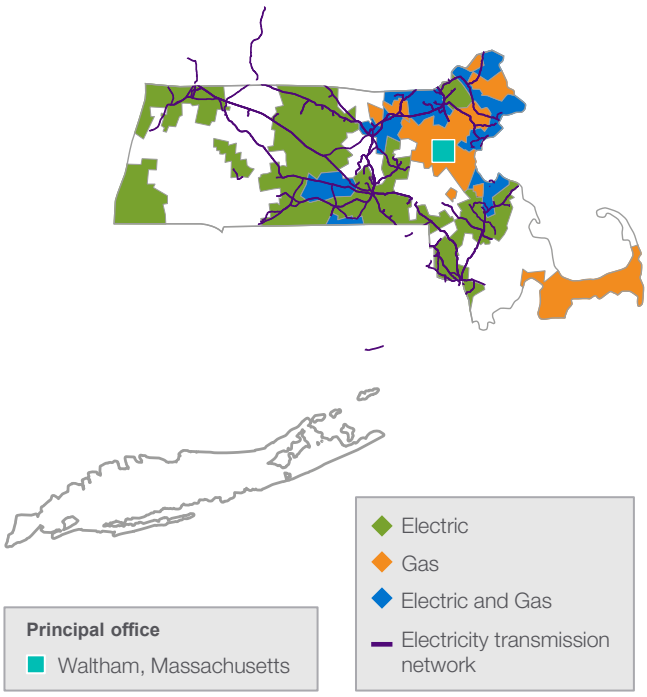
New England also includes Rhode Island, but we will not be talking about the business today as this is still on course to be sold to PPL.

Massachusetts has ambitious environmental goals, including targeting an 85% reduction in emissions by 2030, and net zero by 2050. National Grid is well placed and determined to be at the heart of the State's energy transition help meet those targets.

While, I have just been with the company for just over a month, I have been able to meet with the key State elected officials and regulators and I am confident that we have the ability to work with them to achieve the State's environmental goals.

We are actively participating in the discussion in the State of MA regarding the future of heat (20-80).

We have partnered with the regulator and DG developers to improve the DG interconnection process and have connected more DG per square mile than anywhere else in the US outside of California.



Earlier you heard John and Andy set out the group 5-year financial framework. This is how New England aligns to it:

- 5-year capex spend of $10bn, or ~£7bn, and with expected strong asset and earnings growth;
- We will deliver this through our focus on efficiency and delivering the exciting growth opportunities that we see ahead.
- Over the next decade and beyond there is huge change needed to modernize our networks, with strong growth opportunities for the business.

And with new Performance Based rates agreements, that run to 2024 in electric distribution and 2026 in gas distribution, we have:

- Alignment with the environmental aims of the state;
- Good sight on how we will drive efficiencies to maximise our regulatory returns ; and
- Excellent visibility for capex deployment.

So, first looking at the efficiency opportunity.

Earlier, you heard John and Andy talk about the Group's new £400m cost efficiency program over the next three years, and in New England we have a target to deliver £125 million of those savings.

£125 million
over 3 years
New England share of Group efficiency programme

This program will help us minimise the impact on customer bills and ensure flat controllable costs across the business. Let me give you examples of ways in which we will deliver efficiencies:

- Digitising and automating our work processes;
- Enhancing our work and asset management capabilities – such as our Copperleaf Asset Optimisation tool, developed by National Grid Partners, which helps to optimize our asset investment decisions and could drive up to $35m in capital efficiency savings each year across New England by assisting our planning team with selecting the best set of projects and programs that will address achievement of our reliability, safety and environmental sustainability goals within economic constraints; and
- Reducing our external and supply chain spend.

These examples, and many more we are working on, give us great confidence that we know how to deliver the savings we are committing to.

And these efficiencies will help us deliver strongly under our performance base rate making frameworks.

You'll have seen in this morning's results that we are currently forecasting a slightly lower return.

Our PBR framework does provide some protection each year as we get an annual revenue increase tied to the rate of inflation, still, with Massachusetts setting rates against historic cost levels, we have an efficiency gap to bridge before we will earn our targeted return.

With the programs I have just mentioned, we expect to bridge that gap next year.

Moving now to our growth opportunities and being at the heart of the energy transition.

I want you to leave here as excited as we are about the next 5 years, and beyond, and how we are playing a critical role in enabling Massachusetts to deliver an affordable energy transition.

Over the next 5 years, we have a clear line of sight to investments of £7 billion, £3 billion in Gas and £4 billion in Electric.

I'll speak on the investment we are making in our gas distribution networks, and why this is crucial for both an affordable energy transition, and to deliver environmental benefits.

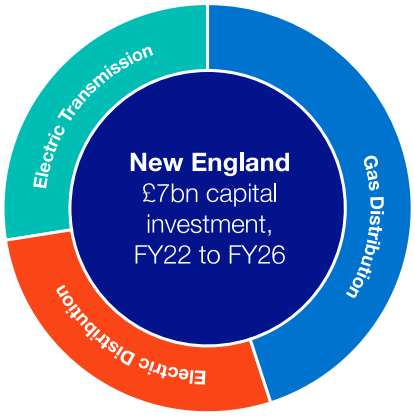
Then Carol will cover the areas of growth we see on the electricity side, and how we're partnering with the State to be able to grow its renewable capacity.

Starting with gas:

£3 billion or around 40% of the £7 billion forecasted investment in the next five years will be in gas. For comparison, we've invested around £2 billion in the prior 5 years.

This is capex agreed with our regulators, who are very supportive of what we do.

- c.80% of our ongoing investment in gas is to modernize the network to ensure reliability and safety;
- This leads to delivering lower emissions from old pipes;
- And for Massachusetts Gas this investment trend is set to continue.



£3 billion
investment trend
to continue in Massachusetts

In Massachusetts we are fully engaged in the Future of Heat docket being run by the Mass DPU.

This docket will explore strategies to enable the State to move to its net zero greenhouse gas emissions future while simultaneously safeguarding rate payer interests and ensuring safe, reliable, and cost-effective natural gas service.

We will file our Company specific plan that supports the State's climate change goals in March 2022 with an order to follow later in the year.

Our biggest program is leak prone pipe (LPP), which is £2.6 billion of this five-year investment.

We have ageing pipeline across our network that we are upgrading, for safety, reliability, and environmental purposes.

These 11,000 miles of main include about 3,000 that are classified as leak prone.

We began our proactive LPP program in 2012 and, recognizing the public benefit of removing LPP from the system, the Massachusetts legislature enacted a law in 2014 to further increase the pace of LPP replacement.

In terms of growth, our LLP program has another 15 to 20 years to run with the pace and complexity of replacement picking up each year:

- In terms of mileage it is the equivalent of new pipe from Boston to Houston Texas, and
- It will provide solid, reliable, growth over the next decade.

In terms of emissions:

- Over the last 10 years we have reduced CO_2e emissions by 29k metric tons through our LPP replacement program, and in the next 5 years, we expect to reduce by another 20k.
- This is equivalent to removing over 4,300 vehicles from the road.
- This pace is aligned with the recently announced targets on methane emissions coming out of COP26.

Reduced CO_2 equivalent emissions by
29,000 metric tonnes
over the last 10 years

We are also working with our local communities on innovative projects to deliver cleaner sources of gas through our pipes, so that the network can support heat decarbonization and carry lower carbon fuels, including RNG and hydrogen.

It's not hard to see how we're doing this – Here we show old pieces of pipe made from wrought and cast iron installed in the 1910's and 1920's and you can compare that to the new high density plastic pipe that we are installing.

I'll now hand over to Carol, who will talk to you about what we're doing across our electricity businesses.

Hi everyone. I'm Carol Sedewitz and I've been at National Grid for 34 years, and my background is across both electric Transmission and Distribution in our engineering, asset management and planning functions in the US.

I'm really excited to be here talking to you about our opportunities across electricity distribution and transmission, and why we're playing a vital role in helping Massachusetts accelerate its journey to net zero.

Of our £7 billion investment program over the next 5 years, electricity distribution and transmission will account for £4 billion of investment split roughly 50:50.

A lot of this investment is to:

- Strengthen our networks, and
- Facilitate the electrification of the state

I'll spend a couple of minutes giving an example of what we are doing to strengthen both our distribution and transmission networks

Before going on to talk about the exiting growth opportunities we have around further electrification.

So first, turning to the work we're Doing Right Now on Network Hardening of the electricity distribution network so our assets perform better during storms.

Why are hardening our Network? It is so our assets perform better during storms. As you can see from the chart, we've had significant storm activity over the last several years.

More storms = more fallen trees = our lines get knocked out = disruption for our customers and drop in economic activity.

This matters - 73% of our distribution lines are above ground.

73%
of our **18,000 miles of distribution lines** are above ground

So what are we doing? We are doing many great things, and one very important one is how are improving the way we manage vegetation along our lines. You see, Vegetation Management, is one of our biggest annual programs, and we are implementing Vegetation Management Optimization as an innovative way to deliver efficiencies and improve reliability.

We are innovating, and using a new digital product to tailor our work on vegetation management (or tree trimming):

Now: we have an annual cycle of tree trimming;

Going forward: using this new technology, It uses satellite imagery and analytics to focus where we will be removing trees where the risk is greatest;

This means: less work overall. Lower costs to deliver the same or better reliability.

This technology has come from National Grid Partners

In addition to Vegetation Management Optimization program, we have other resiliency programs, such as installing stronger poles on the distribution system at critical locations, to make sure they stay up during storms, as well as flood mitigation work. The resiliency investments total $350m totex across our T&D system annually, and they are enabling our networks to perform well, even as the climate changes.

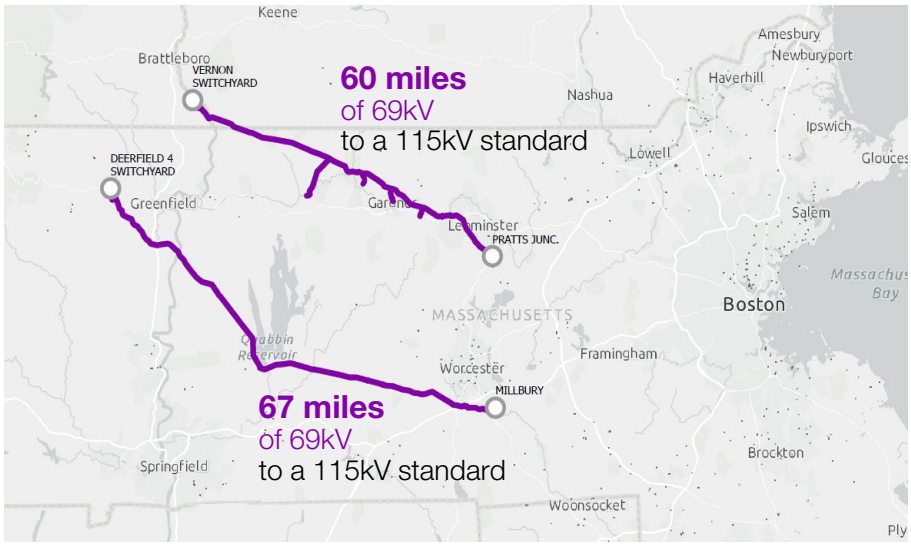
$350m
spend annually
on resiliency across transmission and distribution

Moving to Transmission, where we own New England Power and the Interconnectors which runs across three states.

Of the £7 billion 5-year program, transmission will account for about £2 billion of that.

As part of our Electricity Transmission 10 Year Workplan, there are several key projects planned to reinforce the backbone of the transmission system including just 5 projects where we plan to reinforce 171 miles of transmission lines at an investment of $900 million.

One example is the replacement and re-build of our 69kV East to West Transmission Lines in Massachusetts. These represent 130 miles of the 171 miles; which is 4 of the 5 projects.



This work serves three principle benefits:

1. Resilience against climate change: it accommodates the need for stronger structures and enhanced conductor capacity to mitigate against rising temperatures, winds and icing.
2. SMART: these projects add high volumes of optical fibre to better enable intelligent digital management of our network
3. Renewable capacity: accommodate the anticipated changing power flows caused by increasing renewable generation, helping us meet longer term clean energy goals.

Which neatly leads me on to the next section, on growth opportunities in our electricity businesses as Massachusetts, and projects we are working on specifically to enable the energy transition.

As you heard Andy talk today about the building blocks around our group EPS targets, it included filings we are making outside of our usual 'Base Rate' filings.

We're going to spend a few minutes talking about a couple of these

- Grid modernization; and I'll explain what I mean by this in a moment, and
- Then Steve will talk about our work on EV infrastructure.

Starting with GridMod.

So – what do we mean by Grid Modernisation? We mean adding intelligent devices like sensors and automation.

Why are we doing it? To enable more efficient and reliable service to customers and enable higher penetration of distributed resources on our grid.

So, what have we done? In July, we filed our second four-year Massachusetts electric Grid Modernization Plan together with a five-year strategic plan.

The plan includes 'grid-facing' investments of over $300 million to help reduce losses and minimise demand across the distribution network, and Advanced Metering Infrastructure (AMI) – or smart meter - investment of almost $400 million which would see the full-scale deployment across our customer base.

Grid Modernisation Program
$700m
over four years

The plan will help:

- Advance National Grid's and Massachusetts' shared clean energy goals;
- Meet the Company's regulatory obligation to make progress on the DPU's objectives for grid modernization, and
- Creates a significant investment opportunity for the Company.

We are awaiting DPU approval on the filing and expect them by summer 2022.

Now, let me give you one example of what we're DOING RIGHT NOW with Grid Modernization.

Fault, Location, Isolation and Service Restoration Program, or FLISR – a new DIGITAL technology program

We have a fantastic video filmed at our Millbury Training Center in MA to introduce FLISR to you.

Again, this was a great example of innovating to drive efficiencies and improve customer reliability. FLISR will be over one third of the $300m Grid Mod investment

We plan to implement FLISR on ~50% of all Distribution circuits by 2031.

We are also innovating with other technologies, such as SPOT the dog, that you can see at the breakout sessions. SPOT is being used to help us find hot spots in substation equipment in both NE and NY. It will allow us to deliver our inspection and maintenance work more efficiently and safely.

Our US technology team has deployed SPOT to our Sandy Pond HVDC Convertor station in Massachusetts and is continuing to deploy at other Key transmission substations in NY and NE.

SPOT is being used to perform autonomous patrols using a payload of thermo-visual cameras to help us find hot spots on electrical substation equipment. It will allow us to deliver our routine inspection and maintenance work efficiently and safely.

National Grid is proud to be the first utility in the world to deploy these robots and lead the way in responsible technology innovation that supports system reliability and worker safety.

Steve will now speak about our Electric Vehicle growth opportunities
Thanks Carol.

Moving to EVs.

Alongside GridMod, we've also submitted a filing for capex investment to support the adoption of EV's – which will be critical to enable the state's goals.

Our Phase 3 EV proposal was Filed on July 14th;

The slide neatly shows the advancement we have made, and acceleration in growth and ambition we are seeing.

Outside of California, this is one of the largest and most ambitious EV proposals ever put forth in the US.

Investing $275m in programs to enable cross sector EV adoption and deploy more than 30k charging points;

Highlights include investments to enable residential, public, workplace and fleet charging.

Also included are rebates for 300 electric school buses in Environmental Justice Communities.

As I said at the beginning that Carol and I would talk to you about opportunities for efficiencies, growth and our Massachusetts business being at the center of the State's energy transition

In each of our 3 businesses we've shared with you examples of these themes and all 3 will move forward driving efficiency and investing for growth and to support the energy transition.

To be clear…..MA state goals and our refreshed rate agreements mean there is a huge amount of investment opportunities and this is driving capex, rate base growth, and earnings/operating profit over the next five years, as follows.

Pulling this together:

- Over the next 5 years we plan to invest $10bn, or £7bn, of capex;
- Driving rate base growth of 8% CAGR;
- Driving expected underlying profit growth of 8% CAGR.

All of which will help the group deliver its overall financial framework and commitments.

We are and will continue to be firmly at the heart of the energy transition aligned with state to deliver affordability to our customers and a cleaner energy future, through advancing the areas shown.

Thank you.

We are and will continue to be firmly at the heart of the energy transition aligned with state to deliver affordability to our customers and a cleaner energy future