Why did we begin this project?

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- MA Green Communities Act required MA utilities to establish smart grid pilot programs:
  - Covering at least 0.25% of customers
  - Utilizing advanced technology to operate an integrated grid network communication system
  - 5% reduction in peak and average load in pilot area
  - Remote status detection and operation of distribution system equipment
- Program Goals:
  - Designed to conduct a limited simulation of the actual operating conditions of a full-scale deployment of smart grid tools and technologies
  - Provide customers with information and incentives to reduce peak and average energy consumption
  - Improve grid performance and reliability, while better informing capital investments and seeking to reduce operations and maintenance costs
  - Complete an evaluation and assessment of the effects of grid and customer facing program components

Program Overview
Smart Energy Solutions

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15k AMI meters in Worcester

Dynamic pricing options to give our customers "Choice" (CPP - default and PTR opt in)

In-home Technology to empower customers (Opt in)

Upgrades to the infrastructure

http://bcove.me/46ye3q80

Worcester Smart Energy Solutions

- **Electric Distribution Scope**
  - Eleven 13.8 kV Feeders have 188 distribution automation devices
  - Five Substations with various levels of automation
  - Mix of urban/suburban areas with OH and UG construction
  - Advanced Distribution Automation
  - Advanced Capacitor Controls
  - Advanced monitoring of Feeder, Transformer, DG, Solar and EV sites
- **Customer Offerings**
  - Customer Opt-out program
  - Time of Use Rate Plans with Bill Protection
  - AMI meters - 15,000 meters with remote reading capabilities
  - Web portal to access interval usage data
  - Home energy management devices/tools available
  - Sustainability Hub
  - Outreach and Education Program
  - Demand Response Capabilities
- **Communications**
  - Home Area Network (HAN) – Zigbee and WiFi
  - Local Area Network (LAN) – RF Mesh and cellular
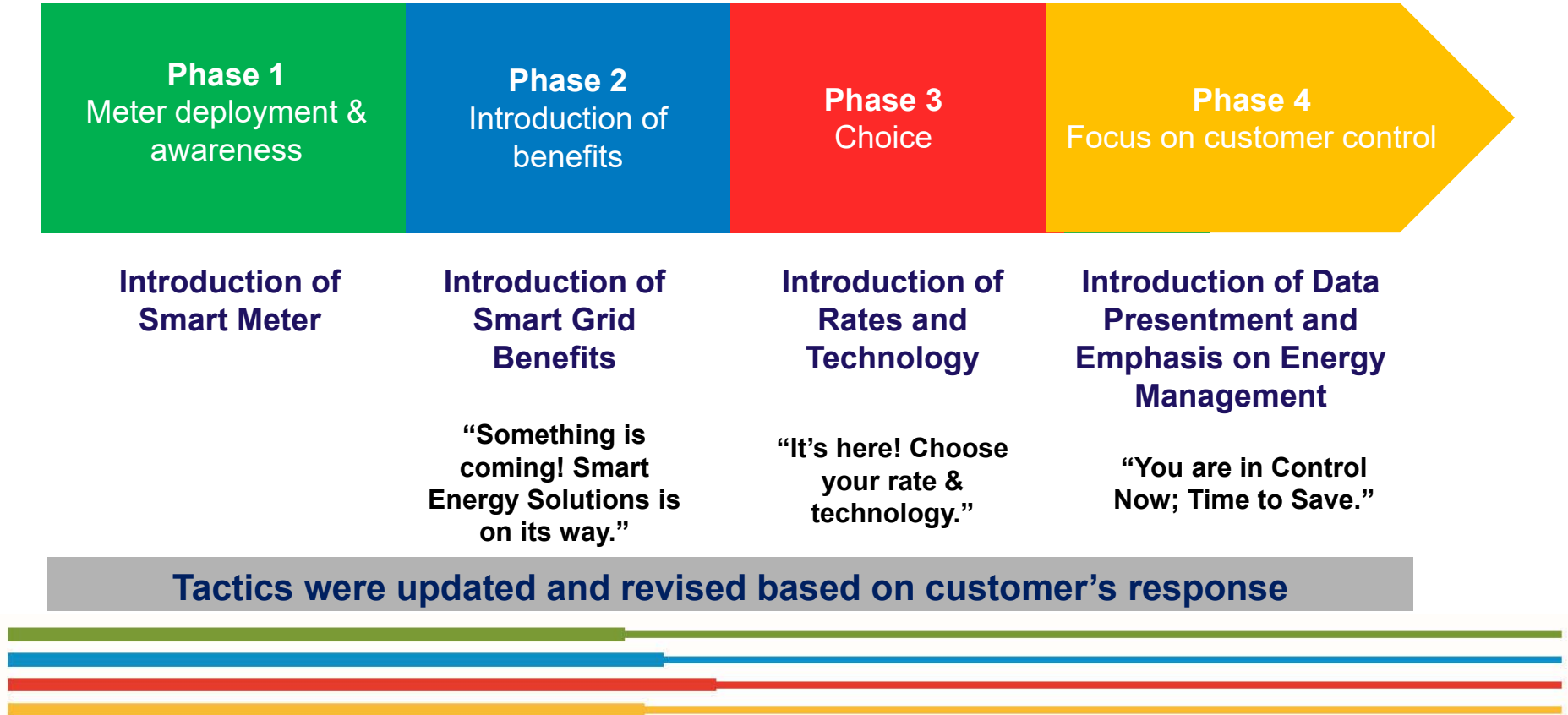 - Wide Area Network (WAN) – WiMAX and cellular

Customer Experience

National Grid designed a phased approach to the Smart Grid deployment.

Phase 1 Meter deployment & awareness	Phase 2 Introduction of benefits	Phase 3 Choice	Phase 4 Focus on customer control
Introduction of Smart Meter	**Introduction of Smart Grid Benefits**	**Introduction of Rates and Technology**	**Introduction of Data Presentment and Emphasis on Energy Management**
	"Something is coming! Smart Energy Solutions is on its way."	**"It's here! Choose your rate & technology."**	**"You are in Control Now; Time to Save."**

Tactics were updated and revised based on customer's response

Pricing Plans

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Smart Rewards Pricing Plan

Residential (R-1, R-2) (Effective 5/1/16 – 10/31/16)	
Daytime (8 AM – 8 PM)	7.70
Evenings (8 PM – 8 AM), weekends, and holidays	6.38
Peak Event (Up to 8 hours on Conservation Days)	37.37

Conservation Day Rebate

Residential (R-1, R-2) (Effective 5/1/16 – 10/31/16)	
Daytime (8 AM – 8 PM)	8.04
Evenings (8 PM – 8 AM), weekends, and holidays	8.04
Peak Event Credit	37.37

Conservation Days and Peak Event Hours

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- Conservation Days are called based on analysis of day-ahead forecast of weather (temperature and dew point) and ISO-NE projected peak load.

- Peak Event Hours are called for the peak hours that meet the threshold criteria (maximum of 8 hours from 8 am – 8 pm)

- Can call maximum of 30 Conservation Days and/or 175 Peak Event Hours in a calendar year.

- 2015: 20 Conservation Days with 135 Peak Event Hours (last event for year called September 9, 2015)

- 2016: 19 Conservation Days with 134 Peak Event Hours (so far to date)

Program Results
Year 1

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Smart Energy Solutions Results - 2015

98%
Customers who joined Smart Energy Solutions & **remain in the program.**

Total Bill Savings
$1.25million
Cost of attending 11,000 Patriots football games.

Total Energy Savings
2,300MWh
A month's worth of power for 5,100 homes.

$20

Conservation Days saved more than just energy in 2015!

Conservation Day Rebate Plan
Average total credits earned.

$100+

Smart Rewards Pricing Plan
Average customer bill savings.

▲ **20%**
Additional savings for homes with **in-home technology.**

Sustainability Hub
2,320
visitors in 2015

Help!

Let's just do colors!

Avoiding appliances until off-peak hours is the most popular way to save.

▼**4%**
Average drop in customer energy usage during Peak Event hours.

Average additional savings for customers who visited WorcesterSmart.com

▼**10%**
Energy reduction during Peak Event hours.

$60
Total bill savings for customers.

Year 1 learnings

- Communications fatigue

- Notification flexibility

- Breaking through apathetic demographics

- Engagement tools are a success

- Community engagement is critical

- Increase benefits through new offerings

- Continue to prove the customer value