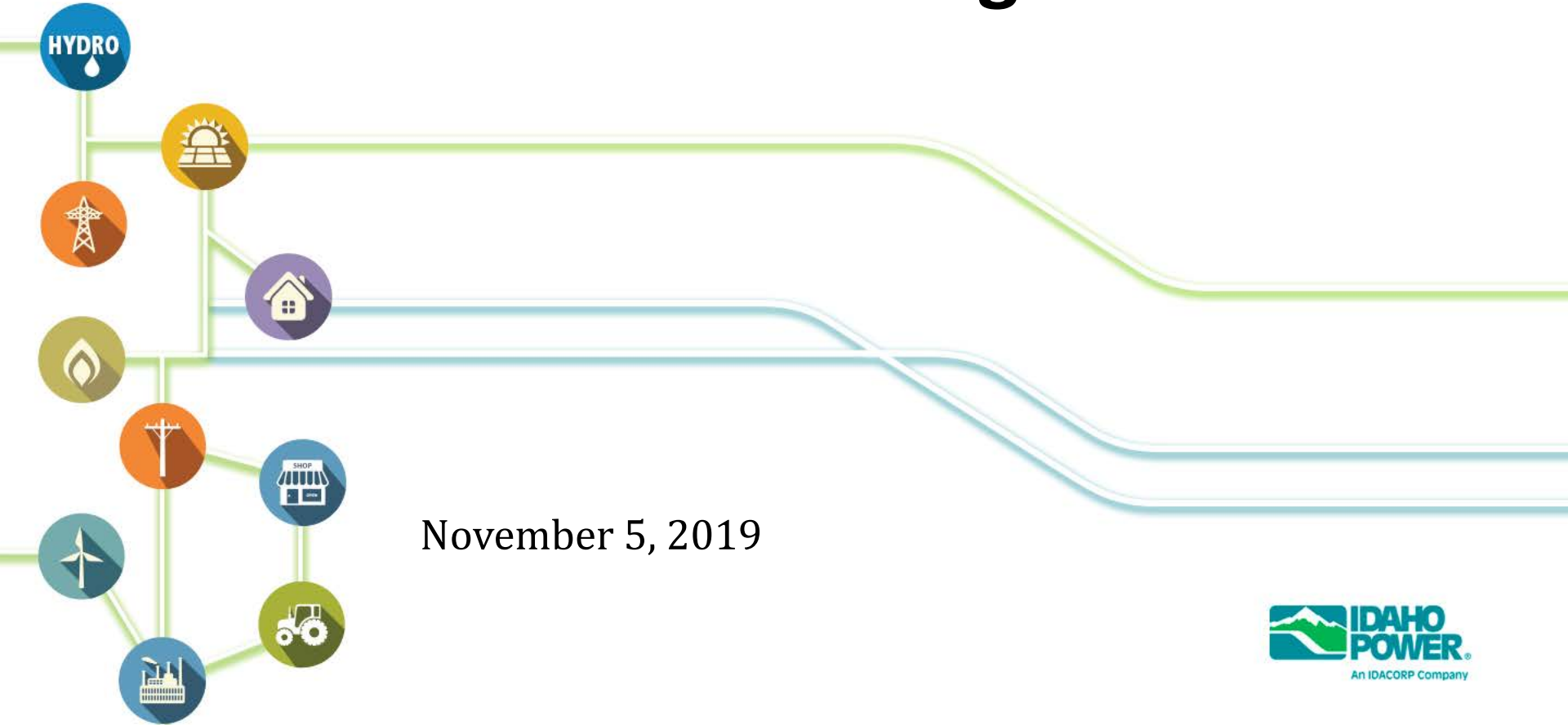


# SMARTgrid



November 5, 2019

# Idaho Power's Smart Grid Strategy

Focus investments in:

## **Operations**

*...real-time sensing, diagnostic, communications, and control equipment to increase efficiency and reliability of the system and make the system more resilient.*

## **Customer Systems**

*...customer expectations are changing and they want more timely information about their energy use.*

# OPUC Smart Grid Goals

To enhance:

*...the reliability, safety, security, quality, and efficiency of the transmission and distribution network*

*...the ability to save energy and reduce peak demand*

*...customer service and lower cost of utility operations*

*...the ability to develop renewable resources and distributed generation*

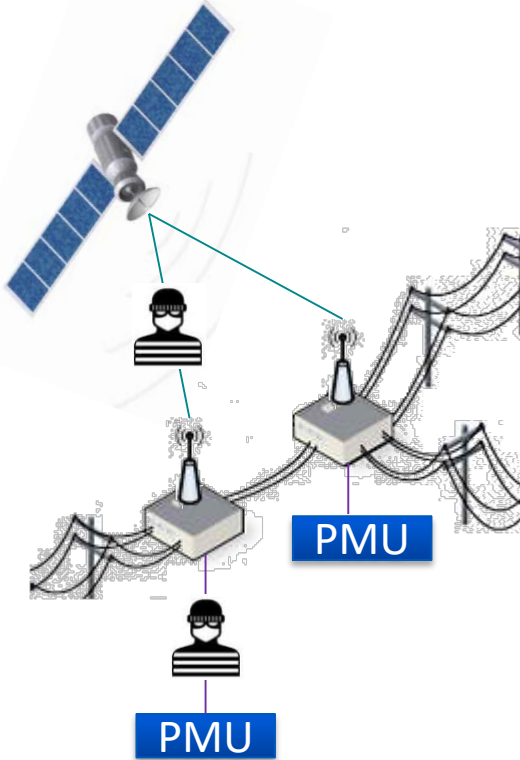
# Oregon Commission's Smart Grid Goal

*Enhance the reliability, safety, security, quality, and efficiency of the transmission and distribution network*

- Timing Intrusion Management Ensuring Resiliency
- Integrated Volt/VAR Control
- Unmanned Aircraft Systems

# TIMER

(Timing Intrusion Management Ensuring Resiliency)



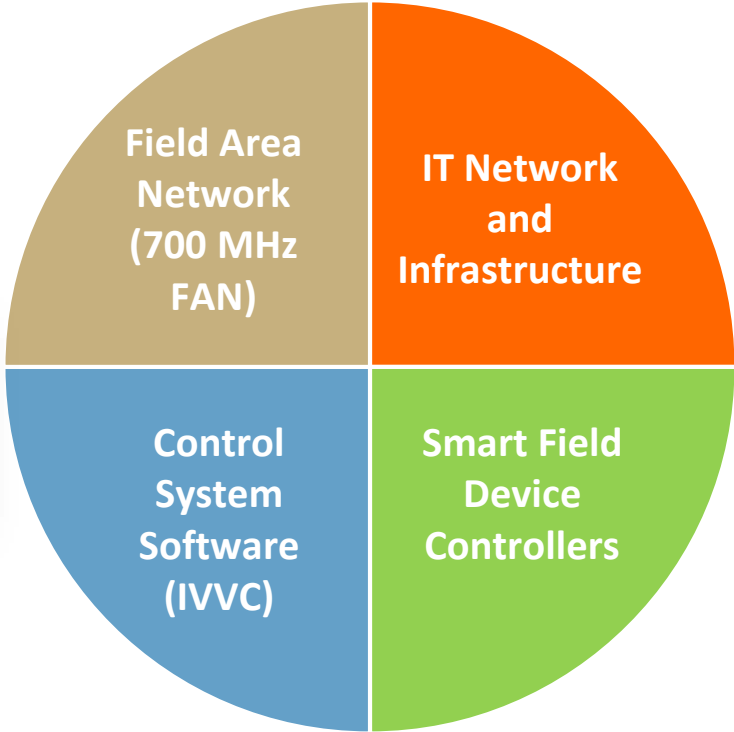
## Attack & Detection Surfaces

- GPS Time Signals
- Phasor Measurement Unit (PMU)
- Phasor Data Concentrator (PDC)
- Routers

# 700 MHz Field Area Network (FAN)

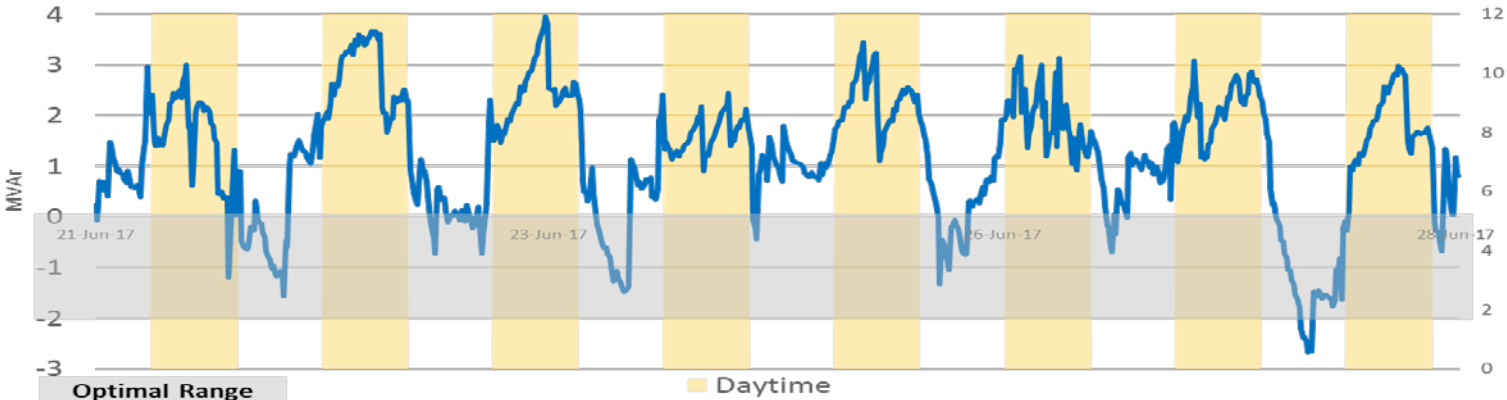


# Integrated Volt/Var Control

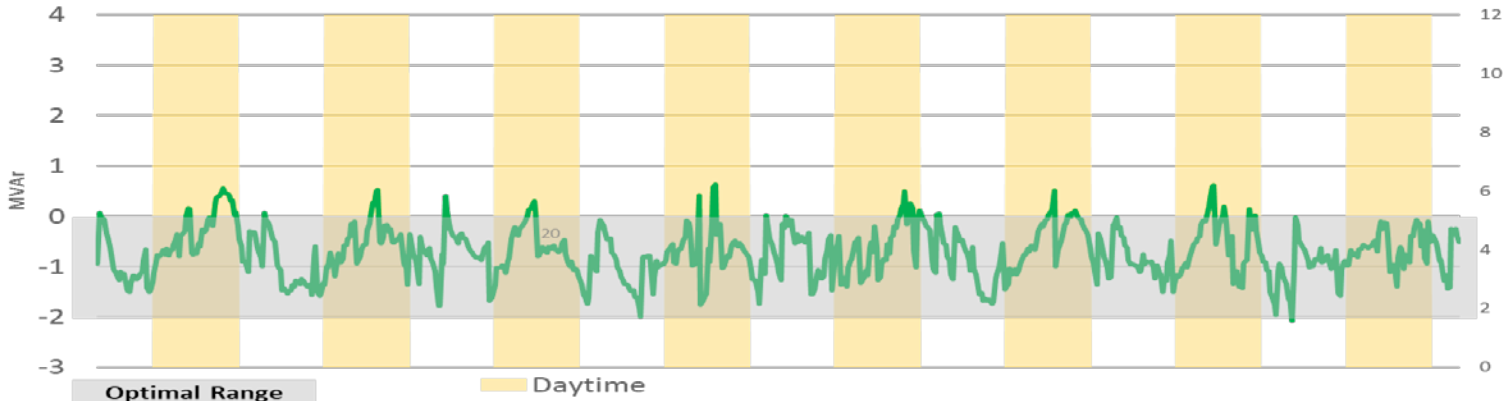


# Results

Pre



Post





# Unmanned Aircraft Systems in the Line Inspection Process

- Pilot Program Review



# UAS - Metrics

**Safety**



Reduce need for bucket/climbing/ during inspect, minimize hazardous terrain. Reduced inspection travel (driving, walking, hiking) over dangerous terrain to remote infrastructure

**Reliability**



Increased visibility and accuracy of reporting defects

**Efficiency**  
(time & money)



Reduced inspection travel time (driving, walking, hiking) over dangerous terrain to remote infrastructure

# UAS - Safety



71

Positive Impact



11

No Impact

# UAS - Reliability



44

agree



2

Neutral



0

disagree

# UAS - Efficiency



58

More Efficient



20

No Impact



0

Less Efficient



# Oregon Commission's Smart Grid Goal

*Enhance the ability to develop renewable  
resources and distributed generation*

- Microgrid

# Microgrid Application Criteria

Reliability Need



Battery + Solar



Low Growth



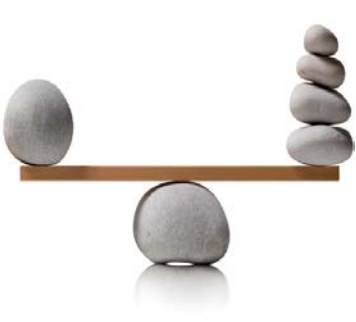
Community



Summer Peak



Cost Effective





# Battery Cost Decline

Battery pack price (real 2018 \$/kWh)



Source: BloombergNEF

# Jordan Valley

Community Center



Water



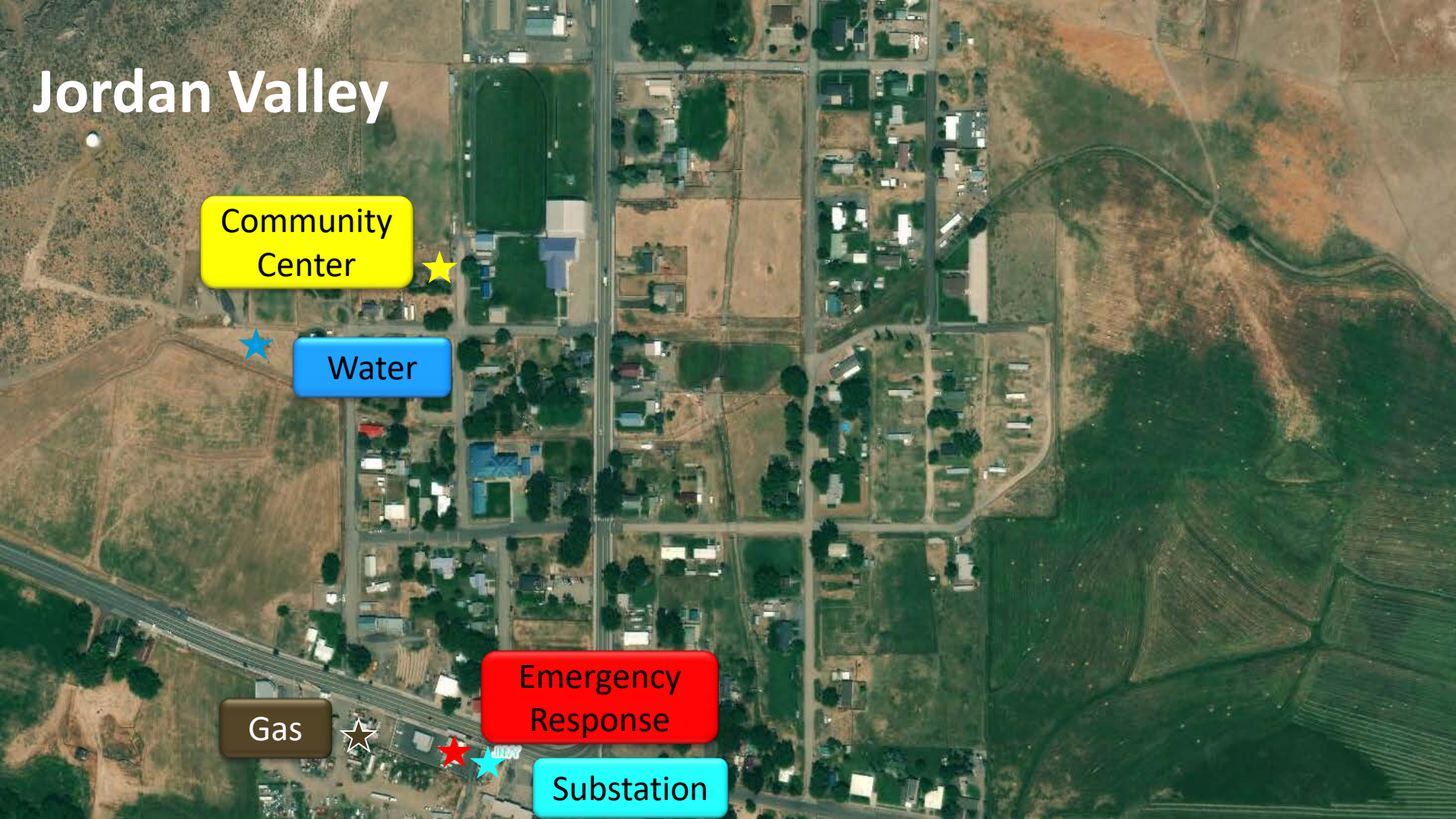
Gas



Emergency Response



Substation



# Jordan Valley Microgrid



Substation

# Oregon Commission's Smart Grid Goal

*Enhance the ability to save energy and reduce peak demand*

- Demand Response Update
  - Irrigation Peak Rewards Program
  - Flex Peak Program
  - A/C Cool Credit Program

# 2018 Demand Response Programs

Total available capacity – 382MW

Actual Results for 2018:

- Irrigation Peak Rewards
  - 2,335 sites 297 MW
  - $\approx$  9 MW in Oregon
- Flex Peak
  - 140 sites 33 MW
  - $\approx$  2 MW in Oregon
- A/C Cool Credit
  - 26,182 sites 29 MW
  - $\approx$  0.4 MW in Oregon



# 2019 Demand Response Programs\*

Total available capacity – 397MW

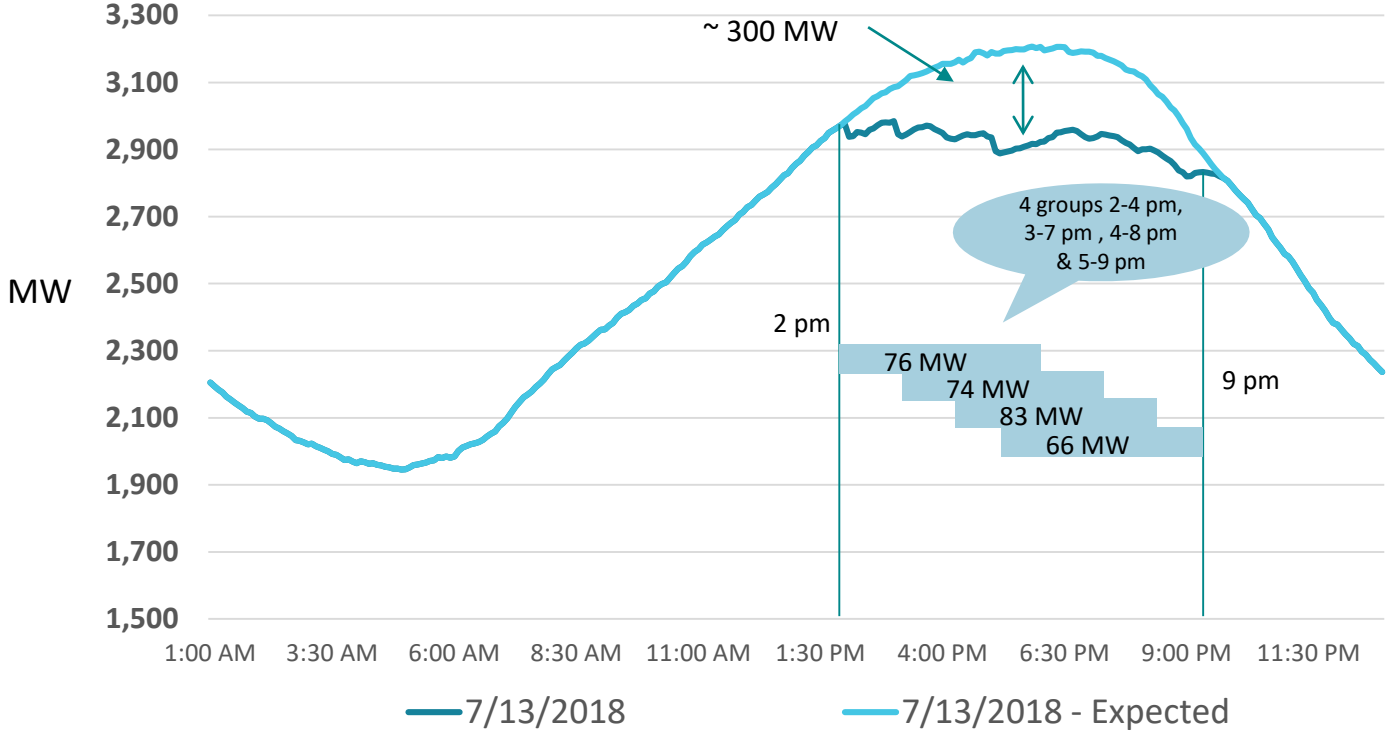
Actual Results for 2019:

- Irrigation Peak Rewards
  - 2,332 sites 278 MW
  - $\approx$  9.5 MW in Oregon
- Flex Peak
  - 145 sites 31 MW
  - $\approx$  10.9 MW in Oregon
- A/C Cool Credit
  - 23,855 sites 24 MW
  - $\approx$  0.3 MW in Oregon

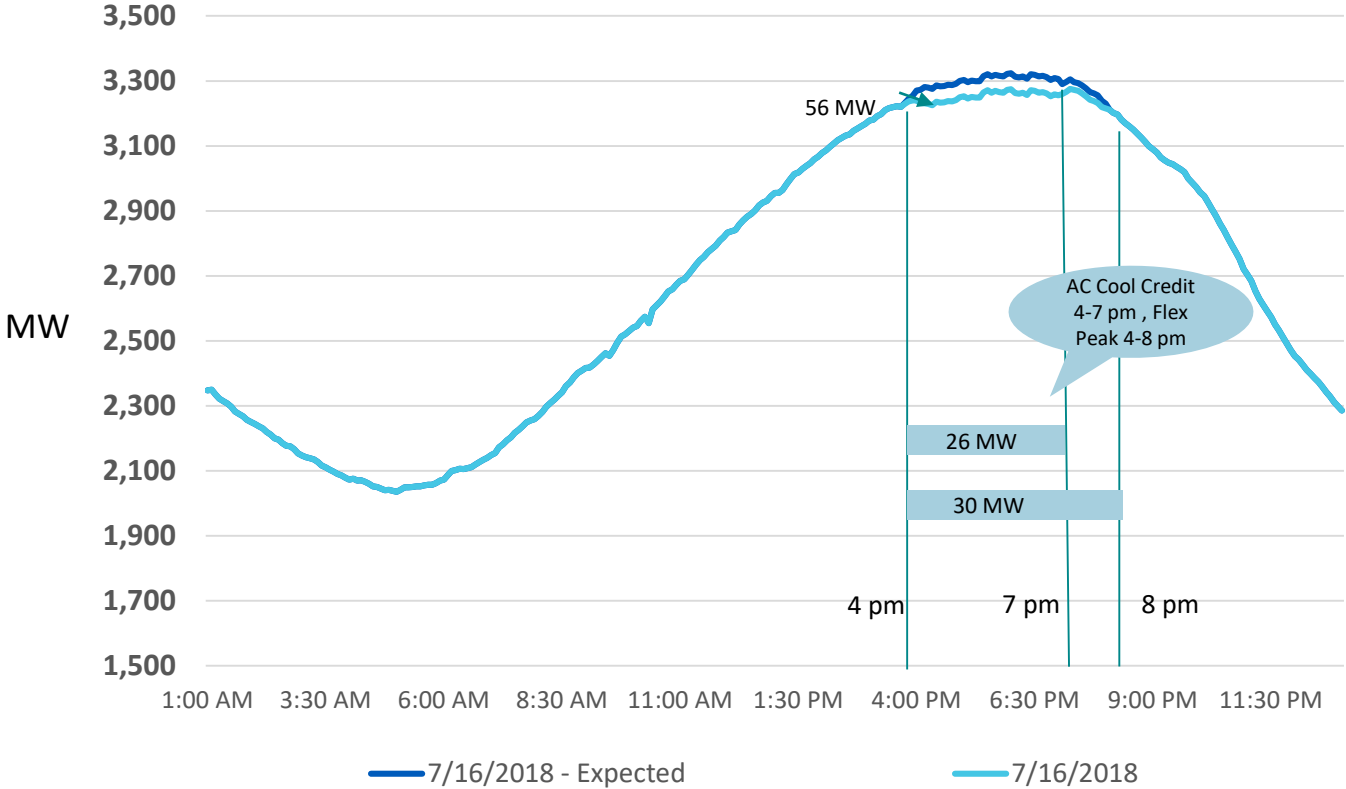


\*Preliminary Results

# 2018 Irrigation Event



# 2018 AC Cool Credit & Flex Peak Event





# Oregon Commission's Smart Grid Goal

*Enhance customer service and lower  
cost of utility operations*

- Customer Experience
  - My Account
  - Account Alerts
  - Customer Relationship Management (CRM) Update

# My Account

## Landing Page

**My Account**

- Add an Account
- Billing & Payment Options
- Heating and Cooling Days
- Modify Payment/Bank Account
- Online Payment Options
- Savings Center
- Sign Up For Alerts
- Start/Stop/Transfer/Upgrade Service
- Update My Account Profile

**My Account**

- VIEW DAILY USAGE
- VIEW MONTHLY USAGE
- VIEW BILL HISTORY
- COMPARE BILLS
- MANAGE ALERTS

Welcome Jane Smith!

Account: 5555555555 [My Account Profile](#)

Service Location: 123 MAIN ST is on the Residential Service Plan (R1)

**Amount Due: \$0.00** [Pay Bill](#)

Due Date: 09/20/2019 [View Bill](#)

Last Payment: \$107.45 on 09/16/2019 [Billing History](#)

Next Meter Read Date: 10/02/2019 **Next Estimated Bill: \$48.92 - \$59.79**

**Billing & Payment Options**

Tab | Bar

**Your Next Estimated Bill Compared With Previous Months**

Month	To-Date Usage (kWh)	Estimated Total (\$)	Last Year (\$)
Sep 2019	1,044 kWh	\$107.45	-
Oct 2019	226 kWh	\$48.92 - \$59.79	-
Oct 2018	486 kWh	\$48.67	-

Copyright 2019 Idaho Power

## Mobile View

**IDAHO POWER**  
AN ESCORT COMPANY

Search, Lock, Menu icons

**The Clean-Energy Pipeline** [Learn more](#)

**Pay Bill** **Outages** **Moving?**

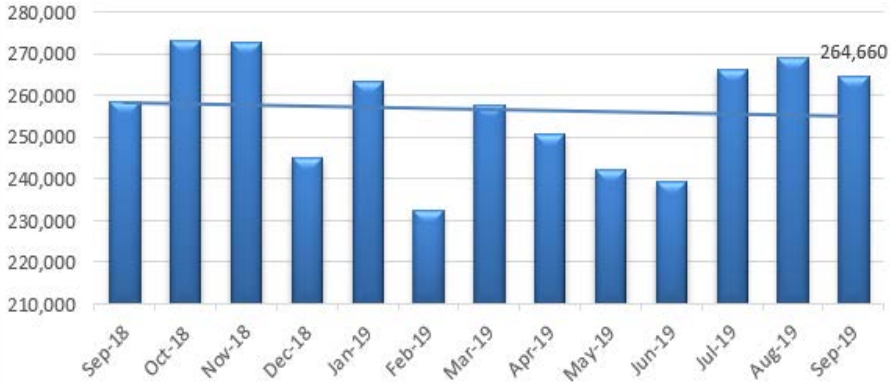
[Sign in to My Account](#)

**Find Out Where to Save in Your Home**

Looking for ways to save on your energy bill? For a discounted price, Idaho Power's Home Energy Audit program can help you pinpoint ways to use less energy.

# My Account - Metrics

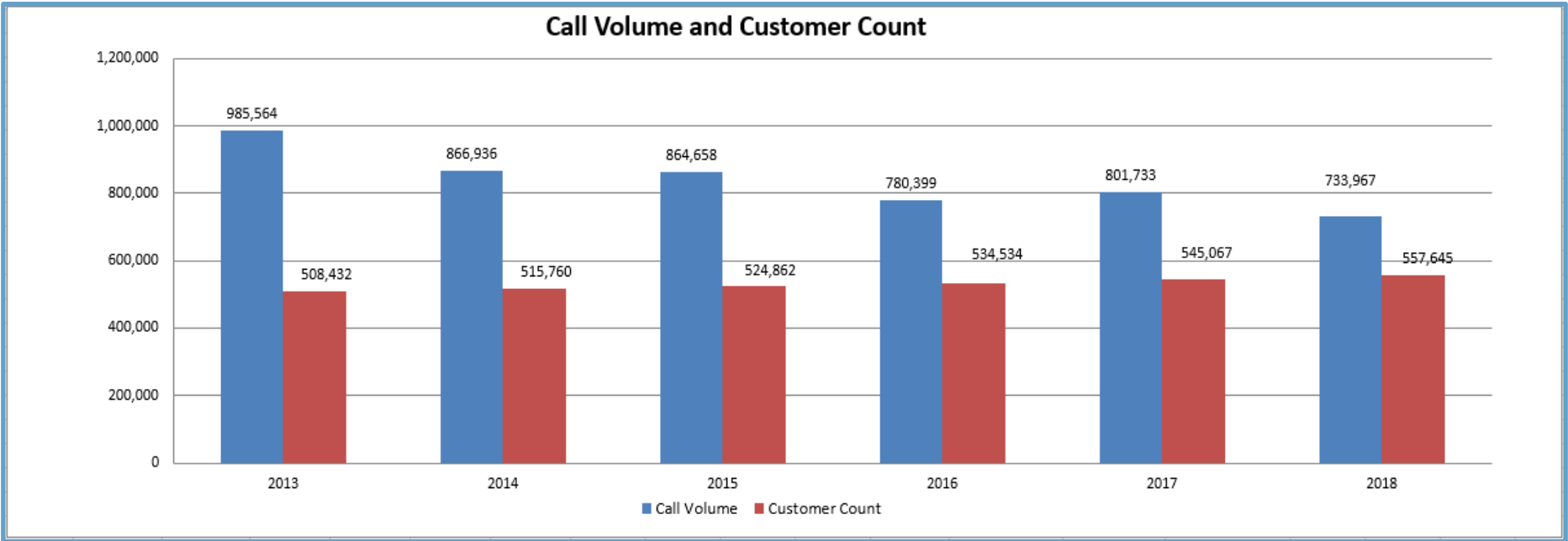
### My Account Monthly Logins



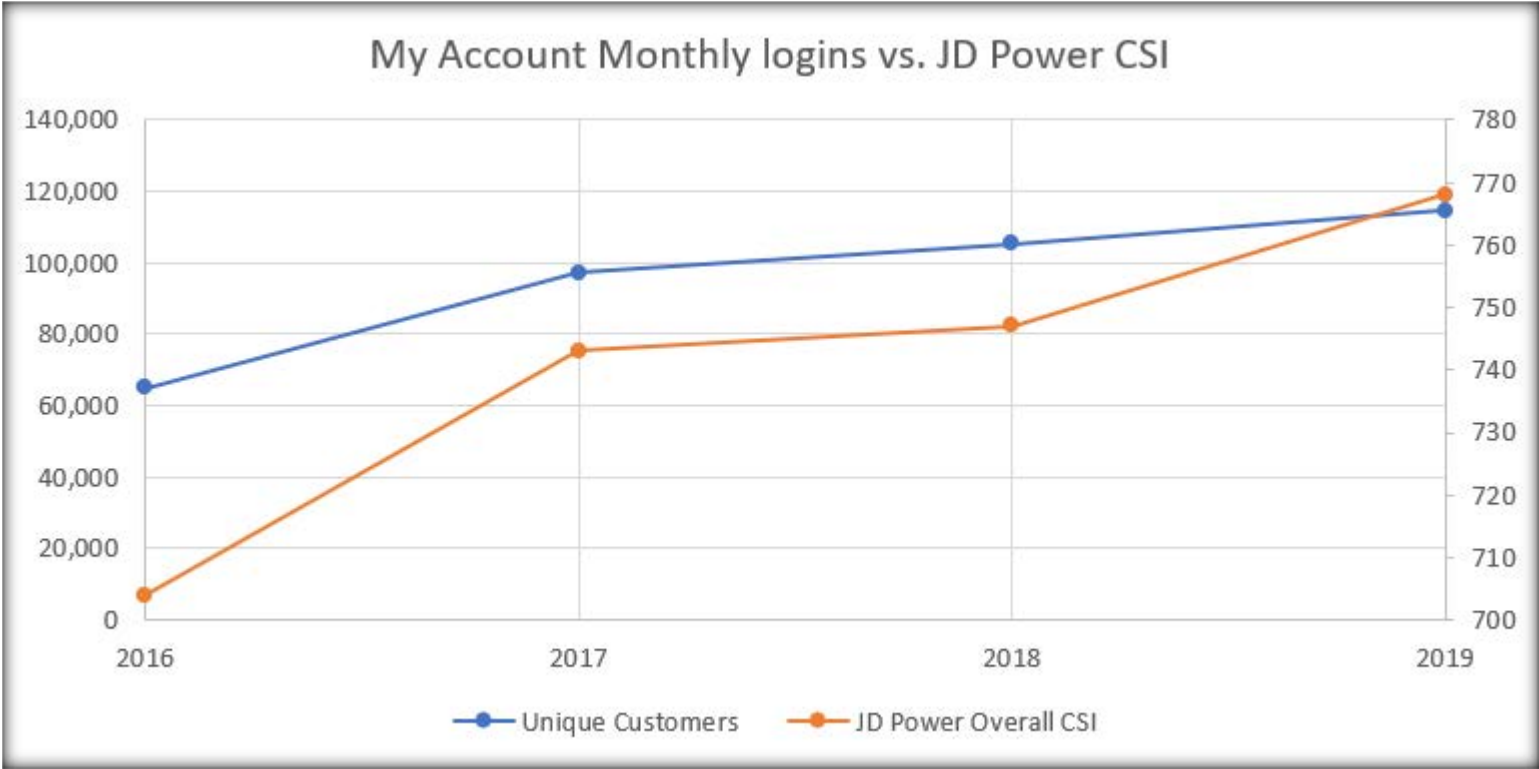
### My Account Individual Customer Logins



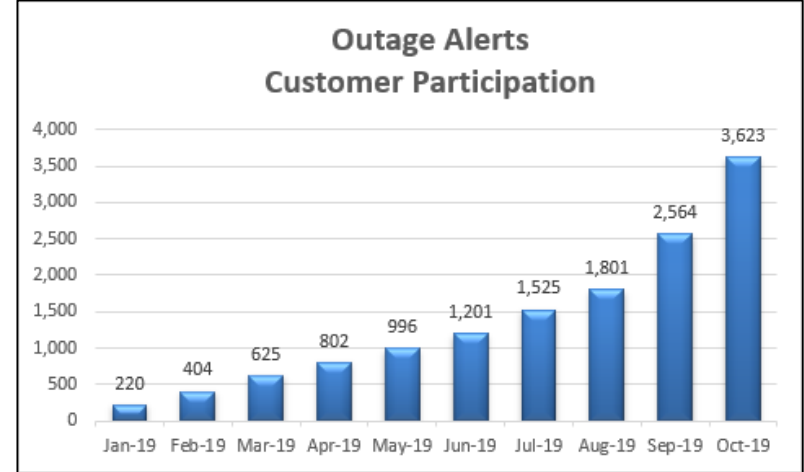
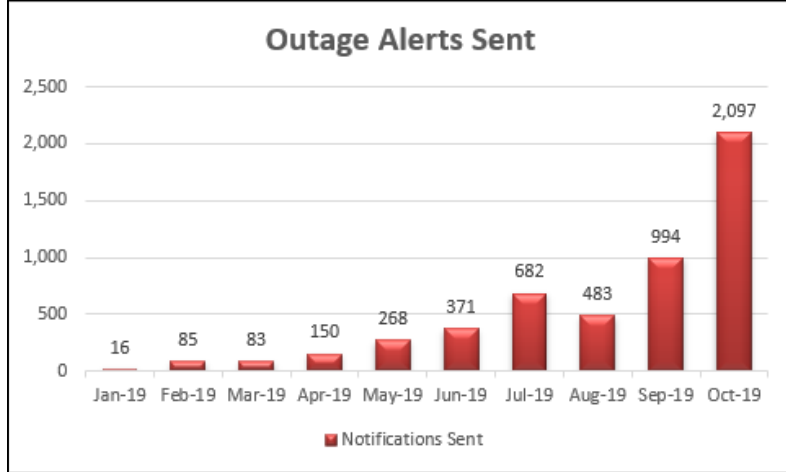
# Customer Interaction Metrics



# Customer Satisfaction – online experience

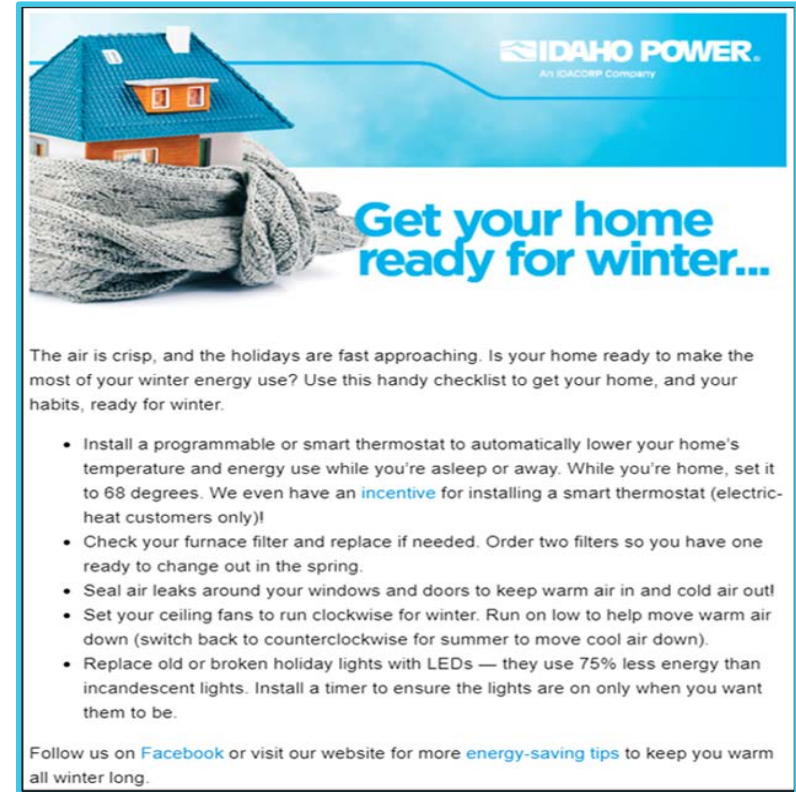


# Account Alerts



# Customer Relationship Management

- Customer Manager application
- Segment customers based on demographic and psychographic data
- Track and manage marketing campaigns
- Communicate with customers via email
  - CAN-SPAM compliance



The advertisement features a blue header with the Idaho Power logo and the text "An IDACORP Company". Below the header is a photograph of a house with a blue roof and a stack of grey wool blankets. To the right of the blankets, the text "Get your home ready for winter..." is written in blue. Below the photograph, there is a paragraph of text and a bulleted list of tips. At the bottom, there is a line of text encouraging customers to follow Idaho Power on Facebook or visit their website for more energy-saving tips.

**IDAHO POWER.**  
An IDACORP Company

**Get your home ready for winter...**

The air is crisp, and the holidays are fast approaching. Is your home ready to make the most of your winter energy use? Use this handy checklist to get your home, and your habits, ready for winter.

- Install a programmable or smart thermostat to automatically lower your home's temperature and energy use while you're asleep or away. While you're home, set it to 68 degrees. We even have an [incentive](#) for installing a smart thermostat (electric-heat customers only)
- Check your furnace filter and replace if needed. Order two filters so you have one ready to change out in the spring.
- Seal air leaks around your windows and doors to keep warm air in and cold air out
- Set your ceiling fans to run clockwise for winter. Run on low to help move warm air down (switch back to counterclockwise for summer to move cool air down).
- Replace old or broken holiday lights with LEDs — they use 75% less energy than incandescent lights. Install a timer to ensure the lights are on only when you want them to be.

Follow us on [Facebook](#) or visit our website for more [energy-saving tips](#) to keep you warm all winter long.

A decorative green line runs horizontally across the top of the slide, starting from the left edge and curving downwards on the right side.

**Questions?**