

An aerial photograph of the New York City skyline at sunset, featuring numerous skyscrapers and the East River. A network diagram is overlaid on the image, consisting of white arcs connecting several bright, glowing nodes. The logo 'pdv WIRELESS' is centered over the skyline. The 'pdv' is in a large, bold, orange sans-serif font, and 'WIRELESS' is in a smaller, black, all-caps sans-serif font with a registered trademark symbol.

**pdv** WIRELESS®

**Investor Day 2019**

May 21, 2019

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# Agenda



1

**Introduction**

2

**FCC Update**

3

**Market Opportunity**

4

**Product Offering**

5

**Go To Market Strategy**

6

**Business Model**



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# pdvWireless Safe Harbor Statement

Any statements contained in these slides or made during the oral presentation that do not describe historical facts are forward-looking statements as defined under the Federal securities laws. These forward-looking statements include, but are not limited to, statements regarding: (i) the Federal Communications Commission (the “FCC”) will issue a Report and Order that supports the deployment of broadband LTE networks, technologies and solutions in the 900 MHz band on a timely and economically viable basis; (ii) the Company’s ability to satisfy the FCC’s future requirements to qualify for broadband licenses; (iii) the Company’s capital requirements and the timing and costs of its retuning and spectrum acquisition activities; (iv) the demand by, and the Company’s potential contractual terms with, electric utilities and other critical infrastructure providers for the lease of its spectrum assets; (v) the valuation of the Company’s spectrum assets; and (vi) the Company’s business model, including the timing and amount of its contract revenues, operating costs and gross margins. Any such forward-looking statements are based on the Company’s current expectations and are subject to a number of risks and uncertainties that could cause its actual future results to differ materially from its current expectations or those implied by the forward-looking statements. These risks and uncertainties include, but are not limited to: (i) the Company’s FCC initiatives may not be successful on a timely basis or at all, and will continue to require significant time and attention from the Company’s senior management team and its expenditure of significant resources; (ii) any final Report and Order issued by the FCC may differ, possibly significantly, from the Notice of Proposed Rulemaking ; (iii) even if its FCC initiatives are successful, the Company may not be successful in commercializing its spectrum assets to its targeted customers and markets; (iv) the Company has no operating history with its proposed business plan, which makes it difficult to evaluate its prospects and future financial results, and its business activities, strategic approaches and plans may not be successful; (v) the Company will need to secure additional financing to support its long-term business plans; (vi) the Company may not be able to correctly estimate its operating expenses or future revenues; (vii) many of the third parties who have objected to the Company’s FCC initiatives, or with whom it competes against, have more resources, and greater political and regulatory influence; (viii) the value of the Company’s spectrum assets may fluctuate significantly based on supply and demand, as well as technical and regulatory changes; and (ix) spectrum is a limited resource, and the Company may not be able to obtain sufficient contiguous spectrum to support its spectrum initiatives or its planned business operations and future growth. These and other factors that may affect the Company’s future results of operations are identified and described in more detail in its filings with the Securities and Exchange Commission (the “SEC”), including its Annual Report on Form 10-K for the fiscal year ended March 31, 2019, filed with the SEC on May 20, 2019. You should not place undue reliance on these forward-looking statements, which speak only as of the date of this press release. Except as required by applicable law, the Company does not intend to update any of the forward-looking statements to conform these statements to actual results, later events or circumstances or to reflect the occurrence of unanticipated events.

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# The Nextel Experience



Underutilized  
Spectrum



FCC Rule  
Modification



Private  
Enterprise

**NEXTEL<sup>®</sup>**

# The PDV Opportunity



Underutilized  
Spectrum

900 MHz Band



FCC Rule  
Modification

Enable Broadband



Private  
Enterprise

Critical Infrastructure



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## Four Key Takeaways

1

**FCC Process**

2

**Enterprise and Critical Infrastructure Demand**

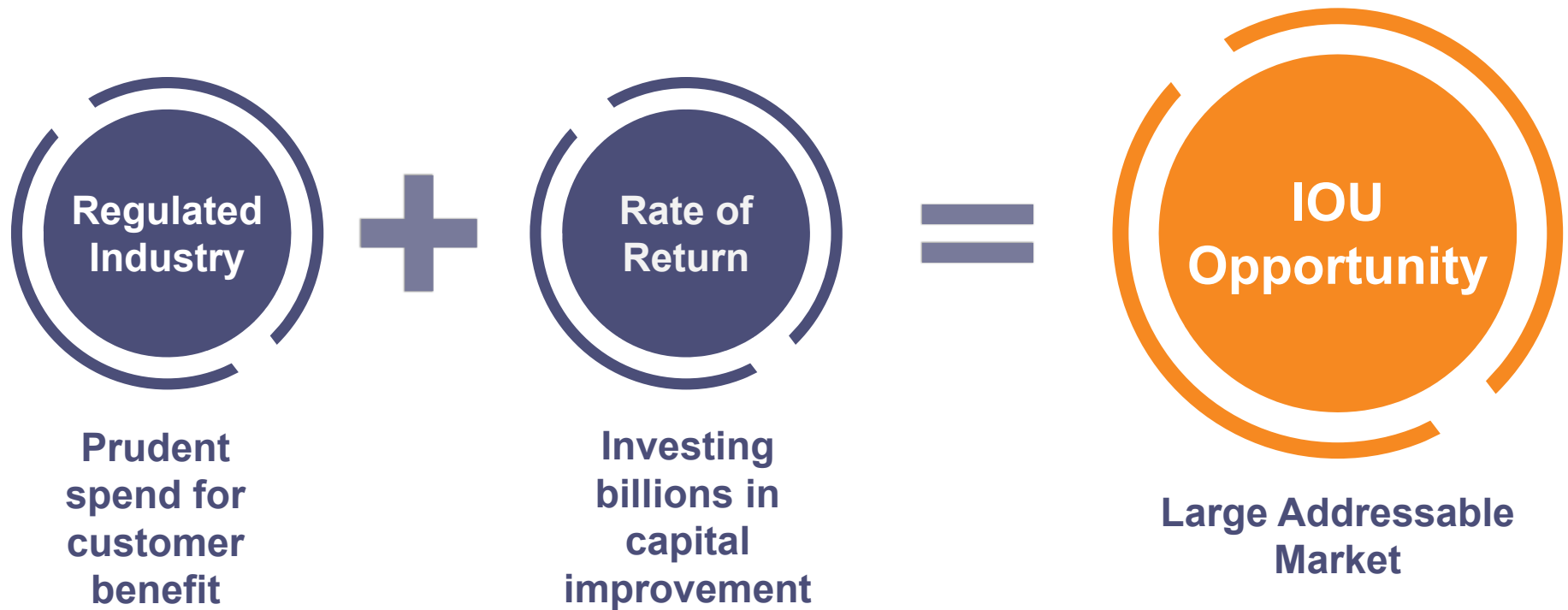
3

**Global LTE Band 8**

4

**Not a Typical Wireless Company**

# Why IOUs?



# Key Elements for Critical Infrastructure Solution

## 900 MHz Band



**Nationwide,  
Private,  
Licensed  
Spectrum**



**Below  
1 GHz**



**Global LTE  
Standard**



**Large  
Ecosystem**



**6 MHz for  
Broadband**





A great new company  
needs a vision of a  
better world within  
reach of its most  
aggressive grasp.

**pdvWireless** has that  
vision.

# Agenda



Introduction



**FCC Update**



Market Opportunity



Product Offering

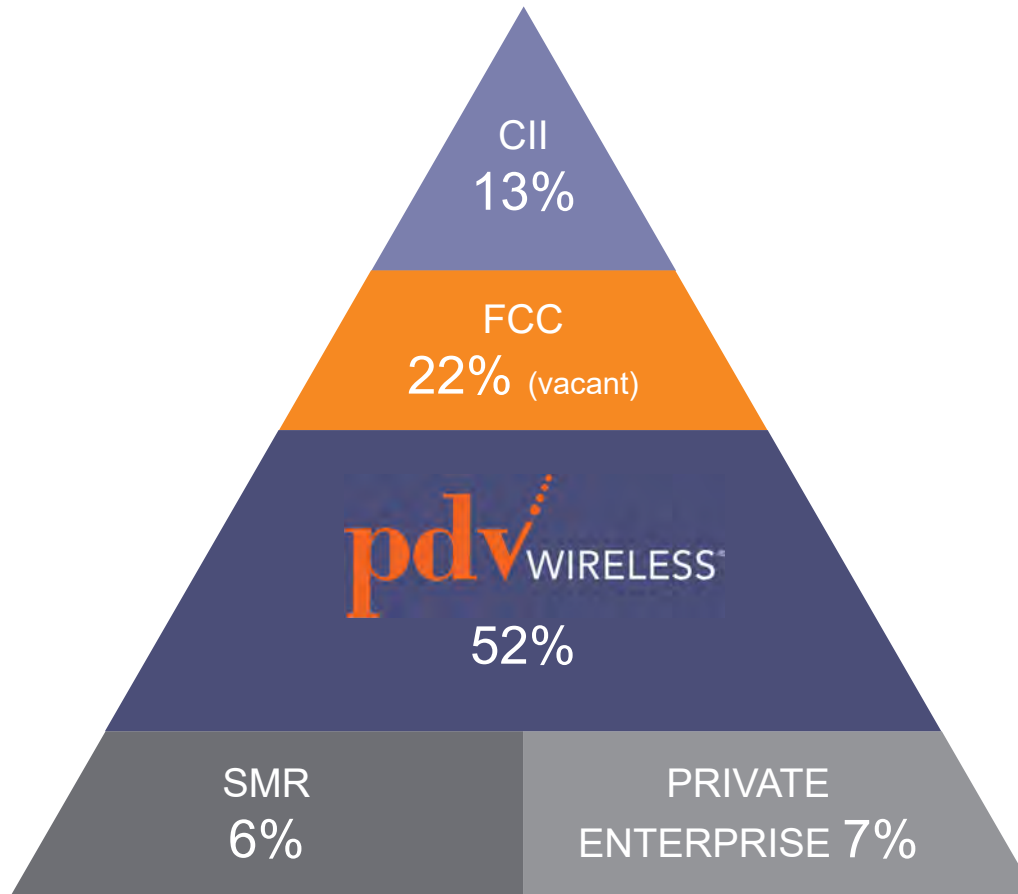


Go To Market Strategy



Business Model

# The Nationwide 900 MHz Licensing Landscape



\*Based on calculated MHz-Pops from currently available FCC ULS license data, 2010 US Census data, and PDV analysis. PDV ownership varies by market. CII – Critical Infrastructure Industry

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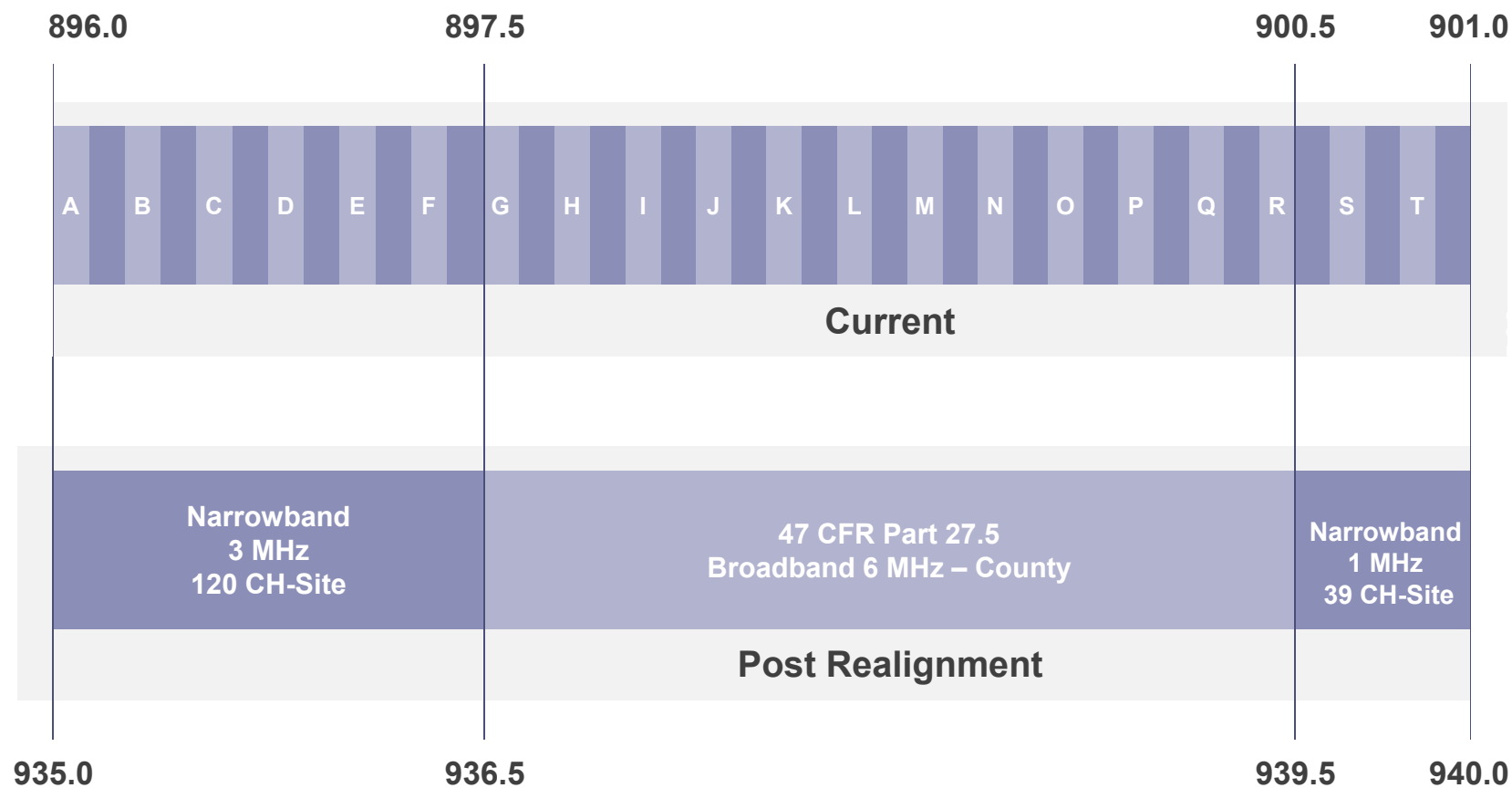
## NPRM FCC Statement



“...to reconfigure the 900 MHz band to facilitate the development of broadband technologies and services, including for Critical Infrastructure.”



# Before and After



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# NPRM Elements



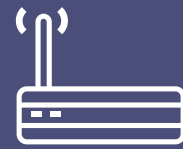
## 6 MHz

Enables Broadband



## Retains Narrowband

Room to Move Incumbents



## Broadband Eligibility

Requires PDV Agreement



## Licensing by County

PDV's Suggested Approach



## Technical Rules

PDV's Suggested Approach

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# Important Focus within NPRM



**Voluntary Retuning  
Process**



**Auction Process**



**Size of  
Broadband Block**



**Retuning  
Process**

# Proven Expertise

**NEXTEL<sup>®</sup>**

**iDEN**

**800 MHz**



**pdv<sup>®</sup> WIRELESS<sup>®</sup>**

**LTE**

**900 MHz**



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# Retuning

Level of Effort



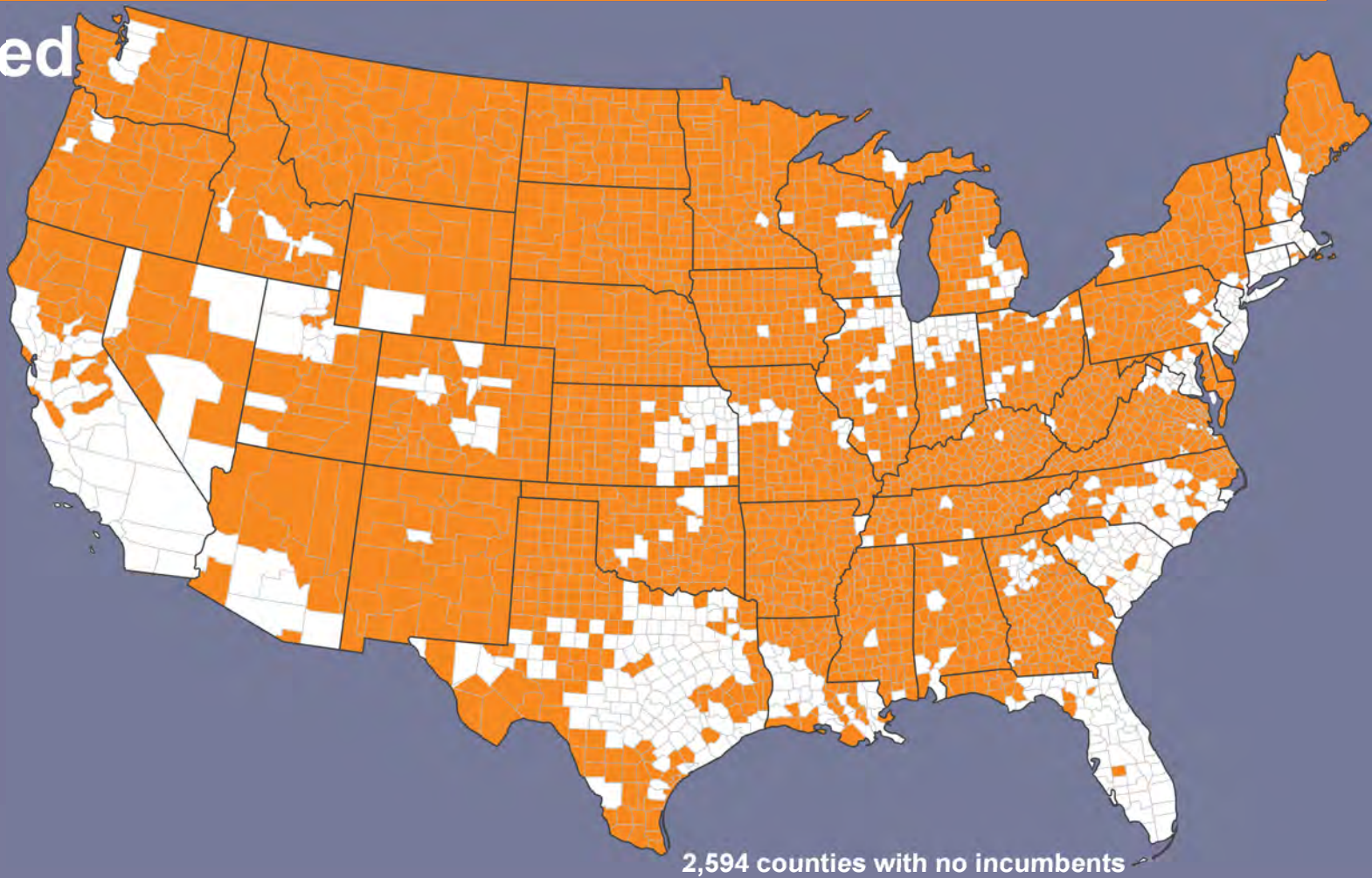
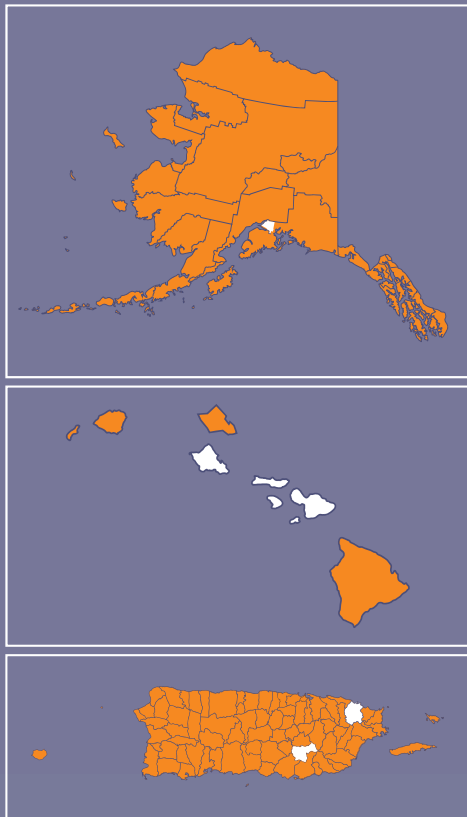
**NEXTEL**

Level of Effort



**pdv** WIRELESS®

# Unencumbered



Total of 3,233 counties in the US and territories; Incumbent counted if site licensed in county (PDV excluded)

© 2019 PDVWIRELESS



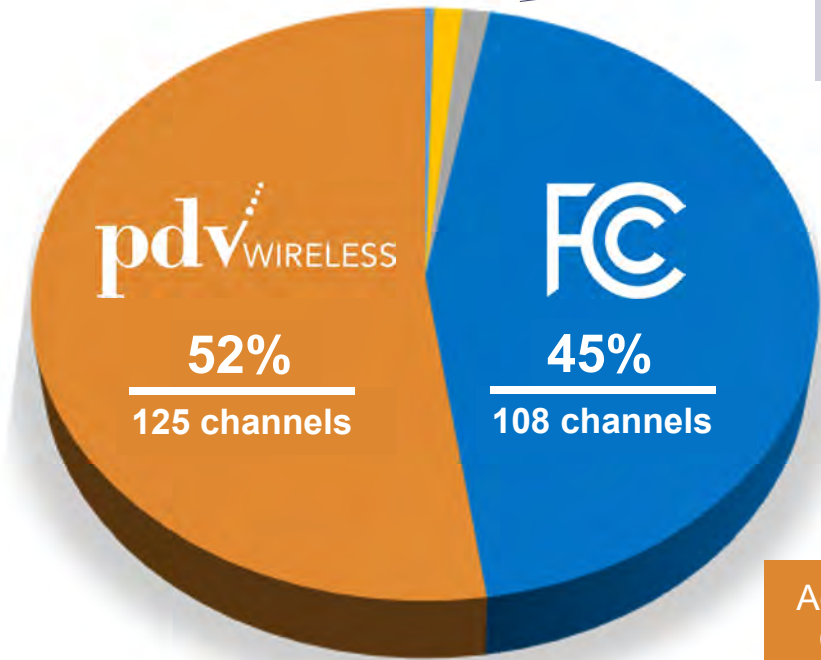
# Minneapolis

6 MHz Broadband Allocation

3 Additional Licensees

7 Channels Owned

**3 Licensees:**  
Railroad Association  
TAMO LLC  
GM Research Corporation



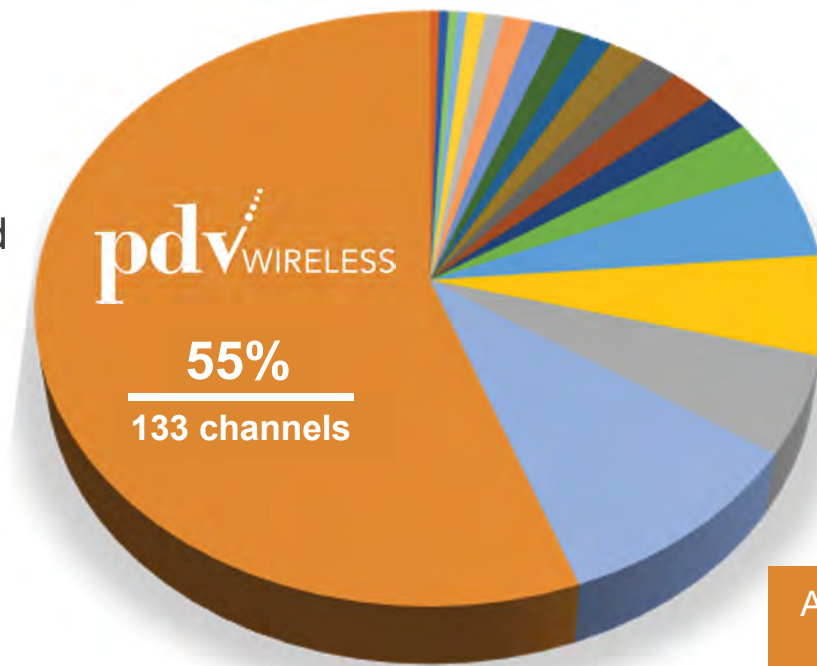
pdv WIRELESS  
Additional 82 owned Channels outside Broadband Allocation

# Chicago

## 6 MHz Broadband Allocation

### 6 Largest Licensees:

24 Channels: Edison / Exelon  
13 Channels: Communications Unlimited  
13 Channels: ESP  
12 Channels: Ford Motor Co.  
7 Channels: UPS  
4 Channels: NIPSCO



## 19 Additional Licensees

107 Channels  
Owned

**pdv** WIRELESS

Additional 91 owned  
Channels outside  
Broadband Allocation



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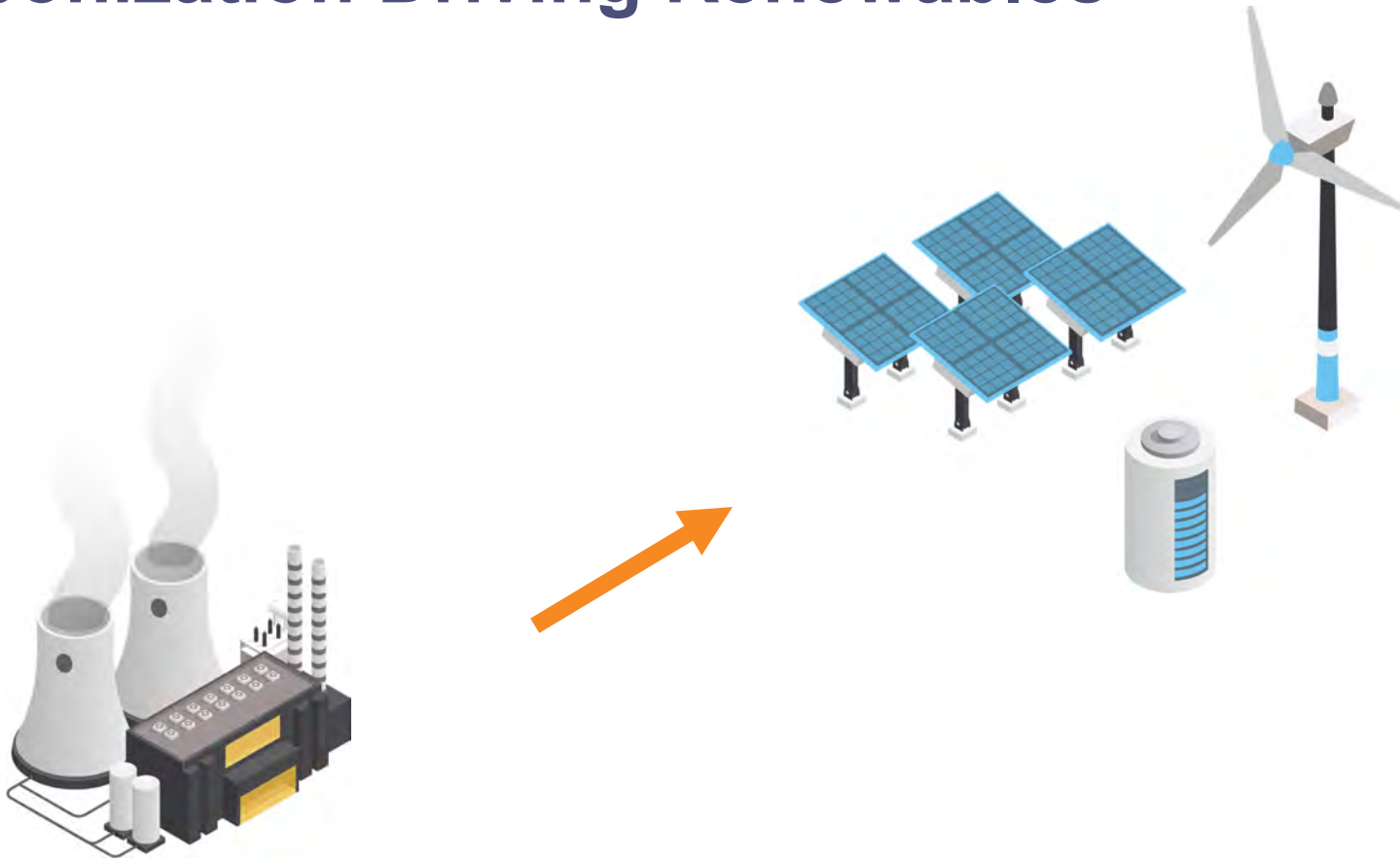
# Fundamental Transformation Within the Industry

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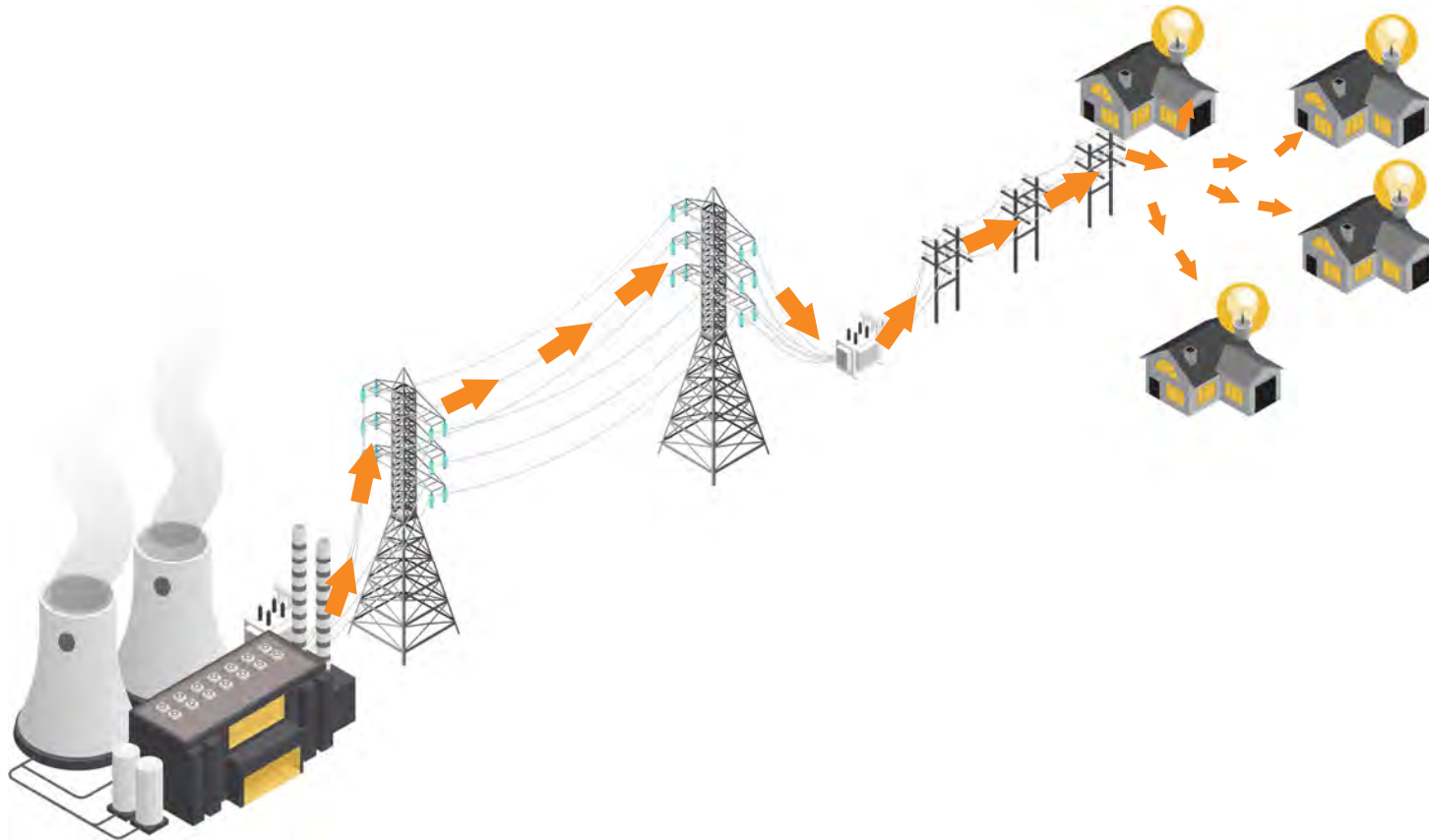
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# Decarbonization Driving Renewables



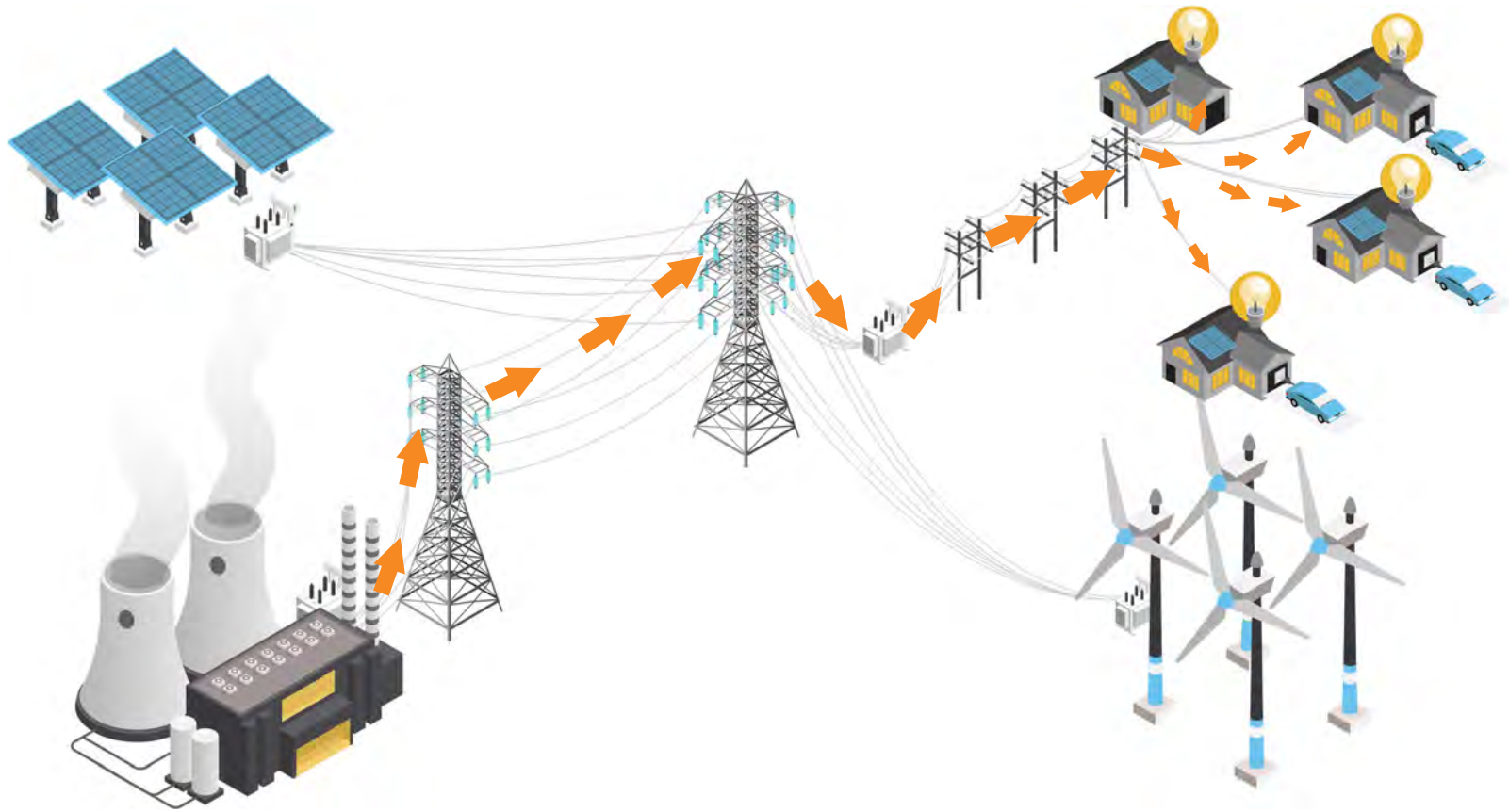
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# Central Generation One-Way Flow

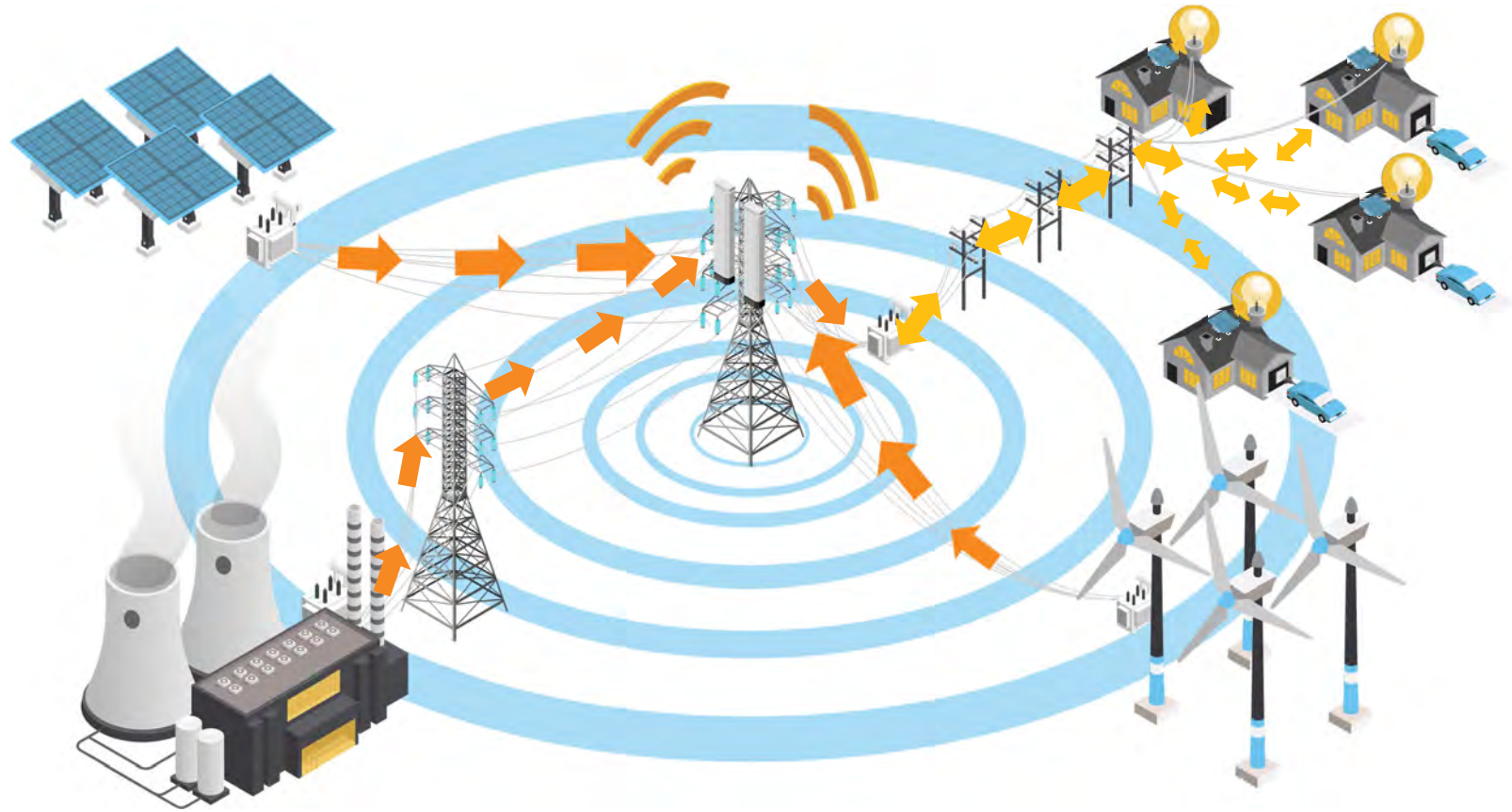




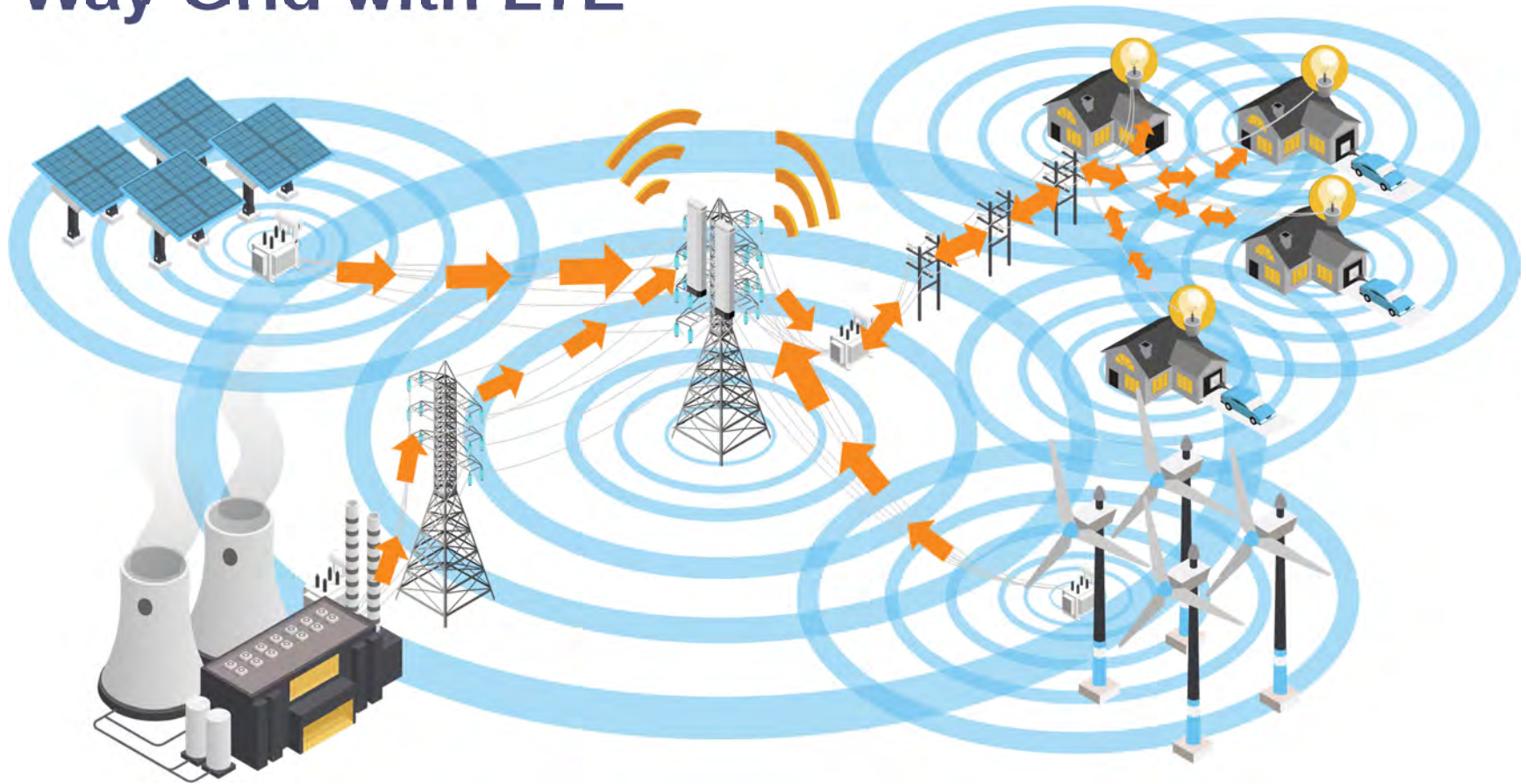
# Integration of Distributed Energy Resources



# Two-Way Energy Flow



# Two Way Grid with LTE





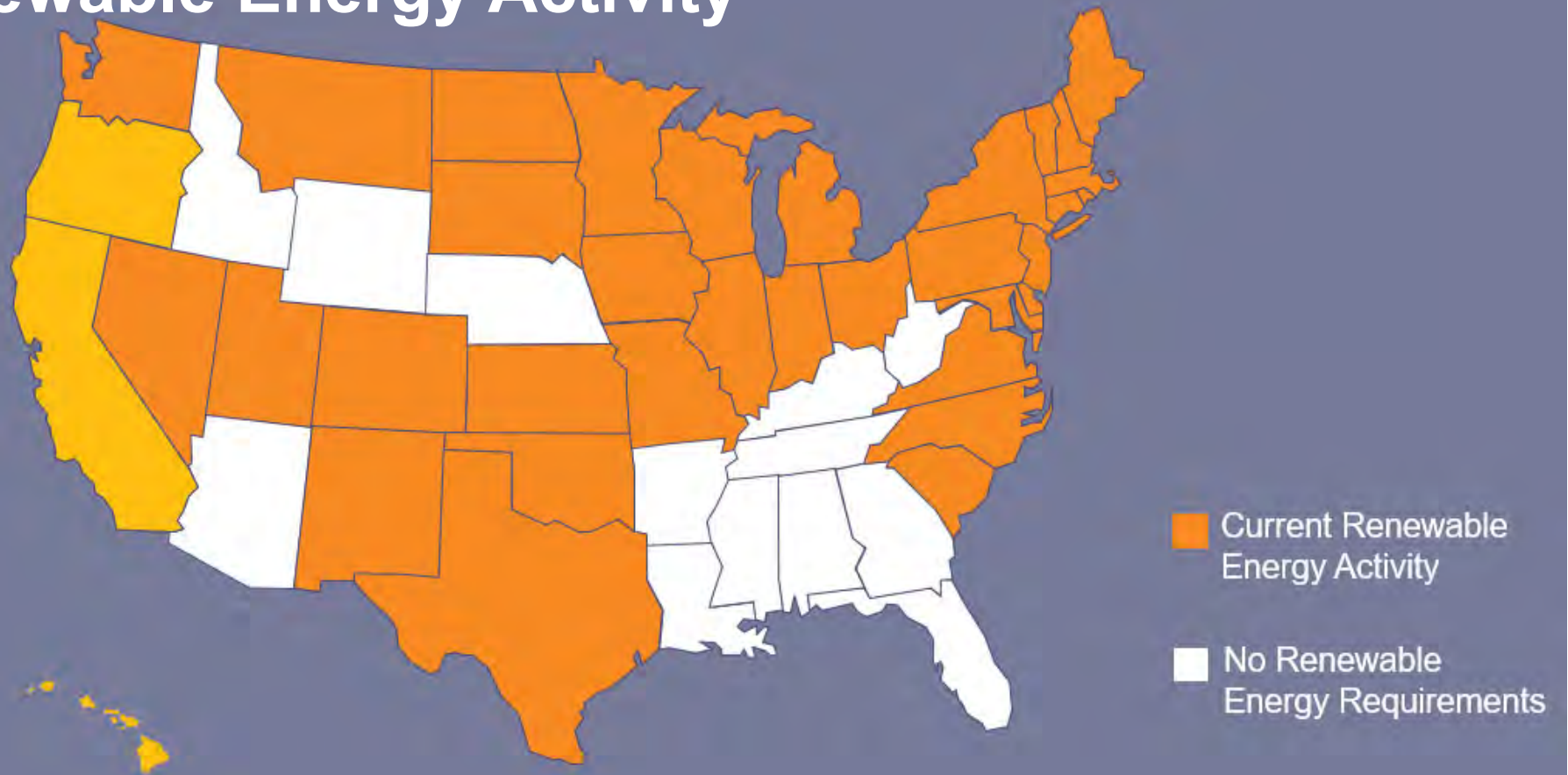
**U.S. power  
outages cost  
customers  
\$79B - \$115B  
each year.**

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# Renewable Energy Activity

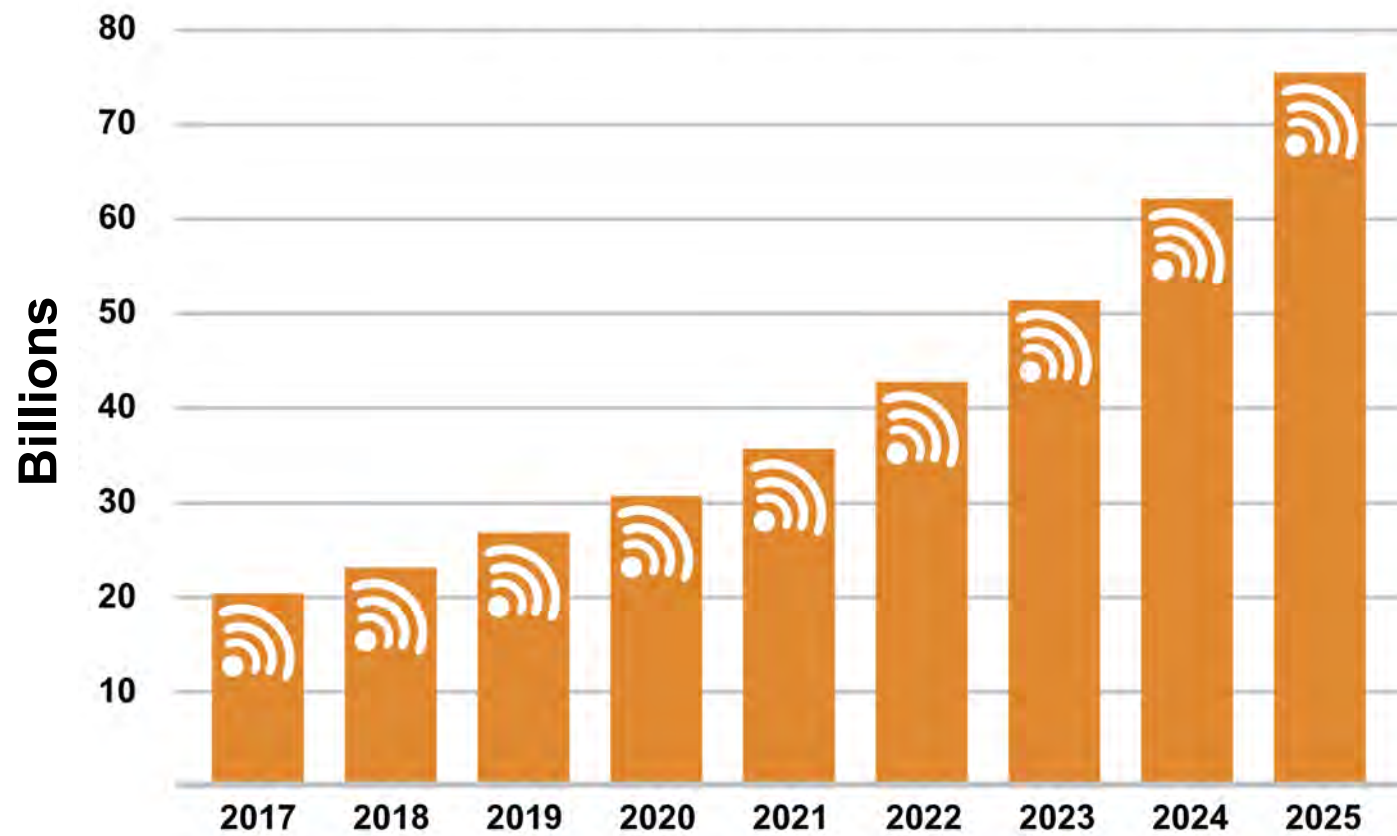


**Average Cost of  
Deploying 1 Mile  
of Fiber = \$20-\$30K**






# Billions of Global IOT Connected Devices



(Source: Statista)

# Utility Systems Require Large Amounts of Data, Situational Awareness and Security



The background of the slide features a photograph of the United States Capitol building in Washington, D.C. The building's iconic dome and classical architectural details, including columns and ornate carvings, are visible. In the foreground on the left, the American flag is flying on a tall pole. The sky is overcast with grey clouds. A large, stylized orange quotation mark graphic is superimposed on the right side of the image, framing the text.

Systems Connected  
to... the Internet  
Constitute a **Systemic  
Cyber Risk** Among  
Critical Infrastructure.

President's National Infrastructure  
Advisory Council Report 2017



# Grid Modernization

## Distribution Substations

- RTUs

## Gas Operations

- Pipeline RTUs

## Mobile Workforce

- Data Terminals

## Distributed Generation

- Renewable Energy Resources
- Microgrids
- Distributed Storage

## Transmission Automation

- Tension Line Motors
- CCTV Cameras

## Distribution Automation

- Reclosers
- Capacitor Banks
- Switches
- Intellirruptors
- Other

## PoleTop Sensors

- Sensor Collectors

## Location Metering

- Meter Collectors

# Utility-Grade Service Requires Private Broadband Networks

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# The News



Ameren

MO Smart Energy  
Plan



Eversource  
Energy

CT Response to PURA  
Docket



PSE&G

NJ Energy Strong  
Program

Billions spent on average for grid modernization programs  
within each state, enabled by private communication systems.



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# Why IOU's



**Urgent Need**



**Critical Industry**



**Essential Service**

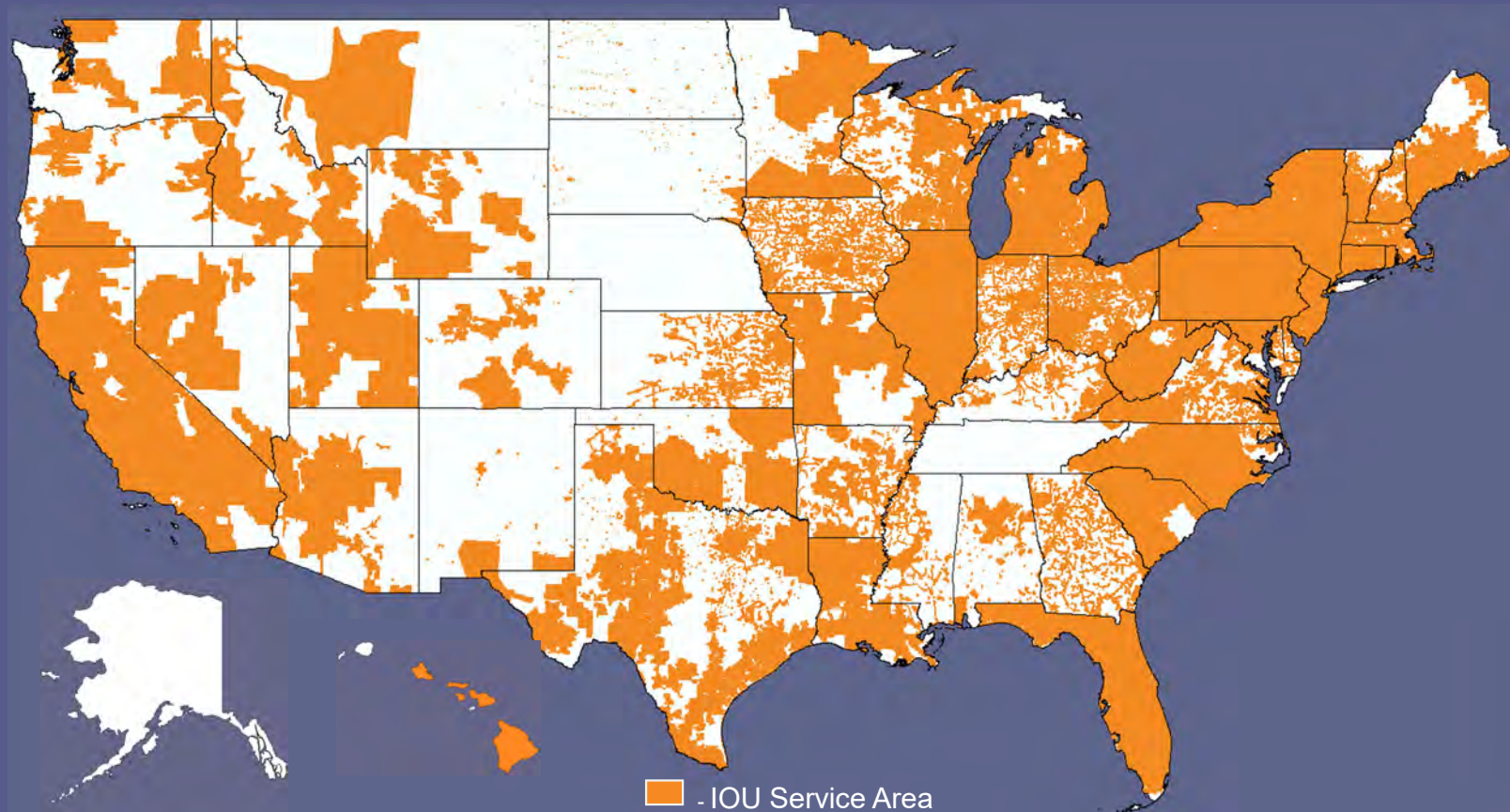


**Everybody**



**Ready Funding**

# US Investor Owned Utilities



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# US IOU Market



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# Lease Treatment



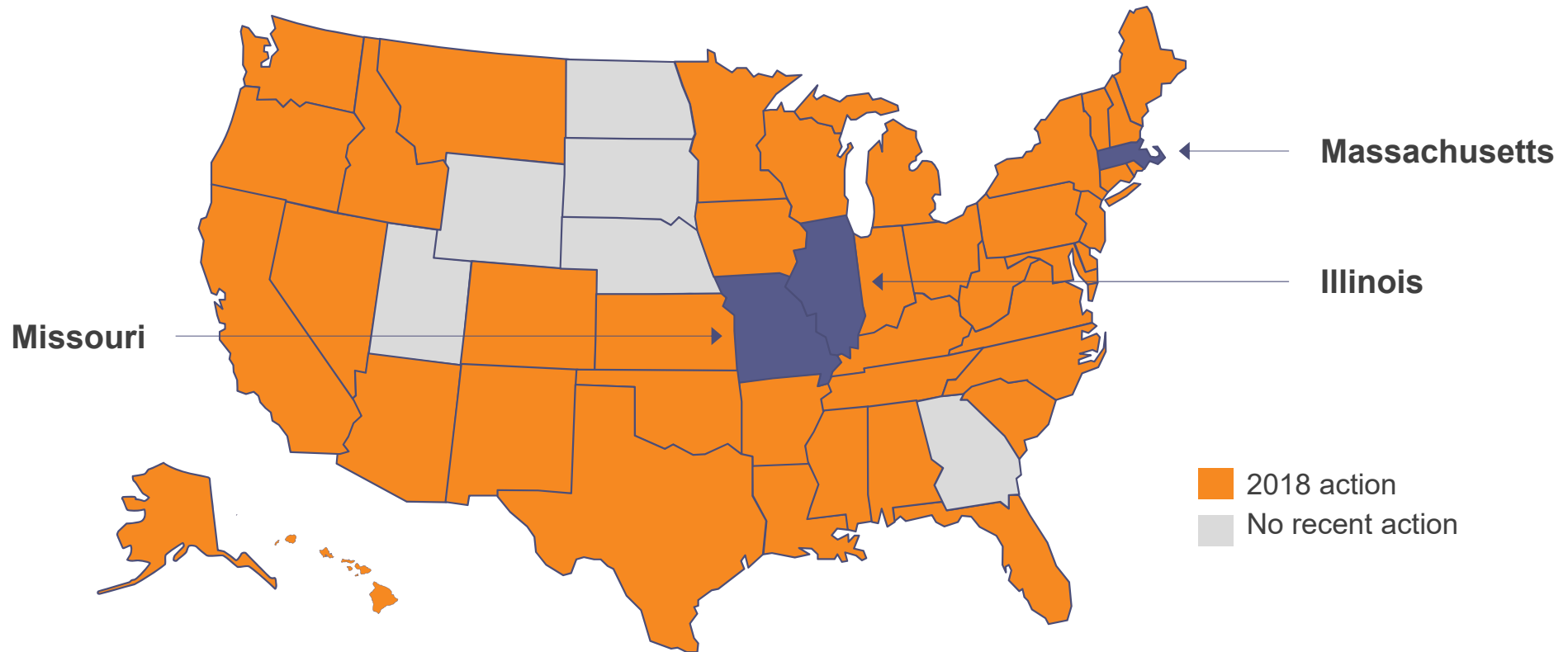
**Spectrum Lease**

=



**Capital Lease**

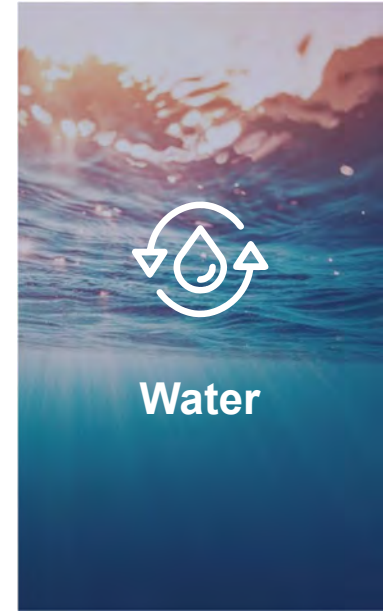
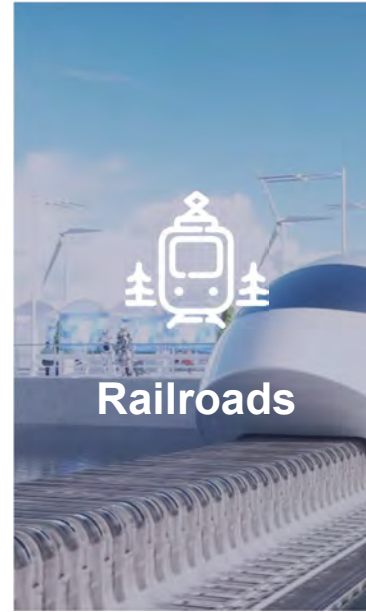
# States Push Grid Modernization



2017 Grid Mod Spending was \$123B

# Other Segments

## Additional Private LTE Platform Opportunities





# Multiple Sectors Rely on Electric Grid



**Strong Interdependence with Electrical Utility Service Area**

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# Multiple Segments Have Common Requirements



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**Product Offering**

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# Key Elements of Our Offering



**900 MHz Broadband**

**Nationwide**

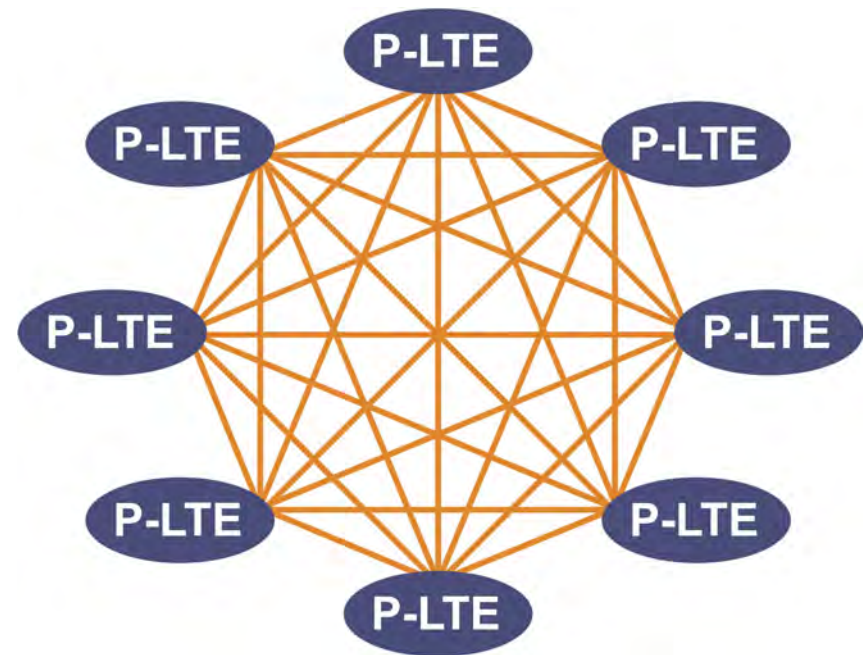
**Communicate to CII Network of Networks**

**Long-Term Leases**

# Vision for Critical Infrastructure



Utility System



Network of Networks

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# PDV Product Roadmap



**Foundational  
Spectrum**



**Accelerate Adoption**

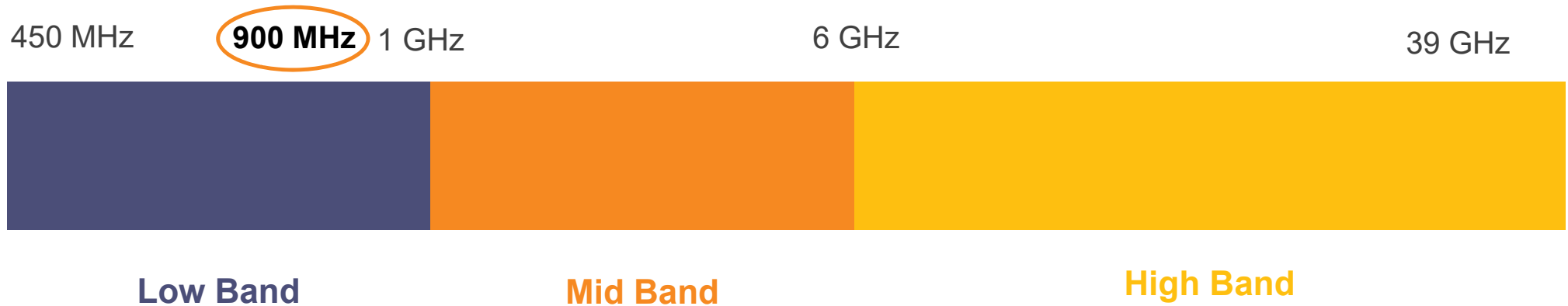


**Enhance Profitability**

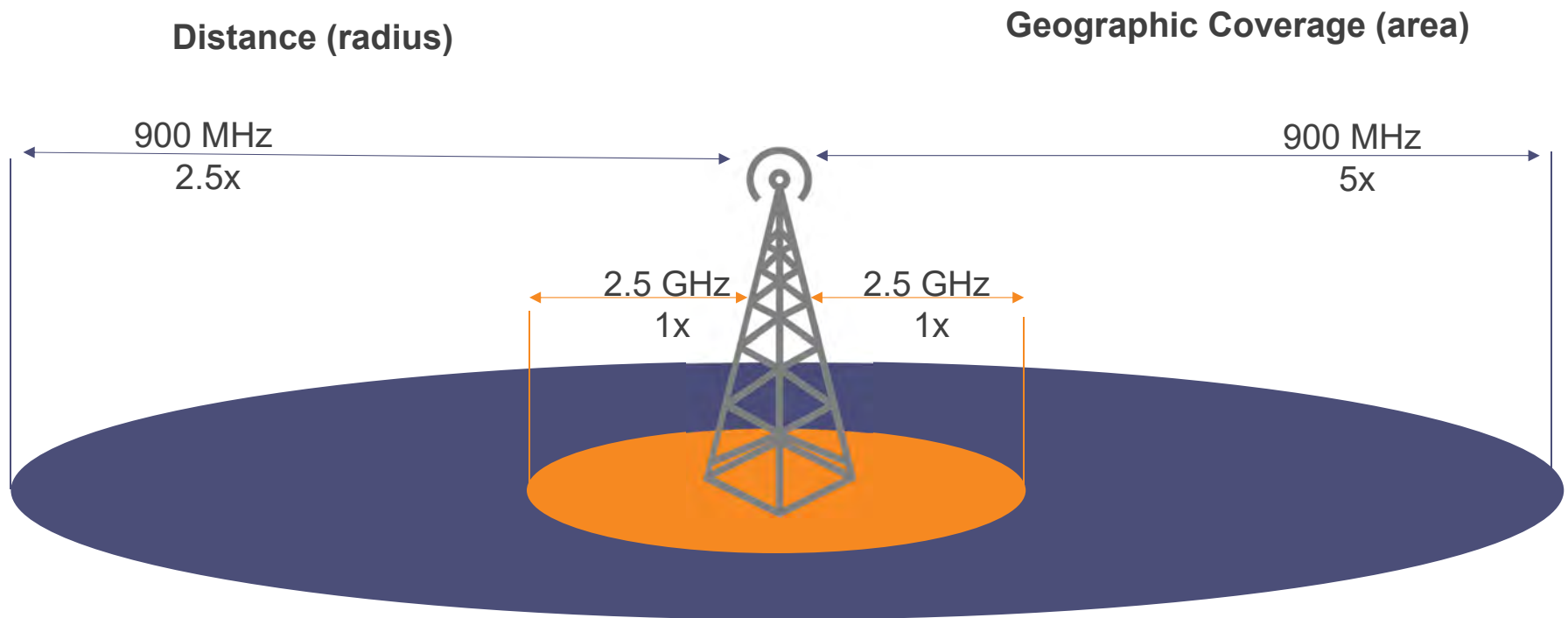


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# 900 MHz is Low Band Spectrum



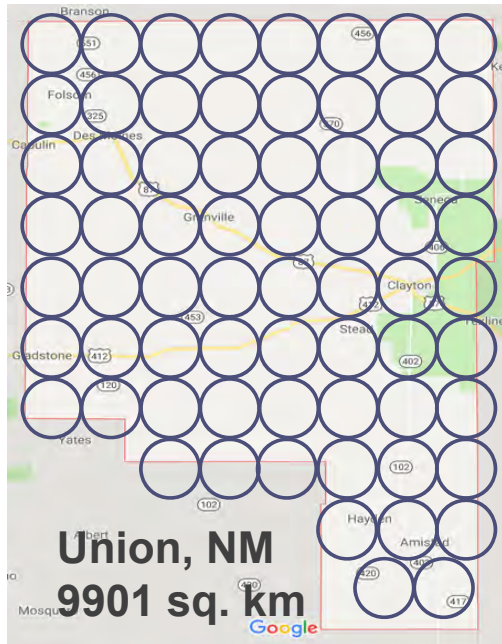
# Low Band Spectrum Advantages



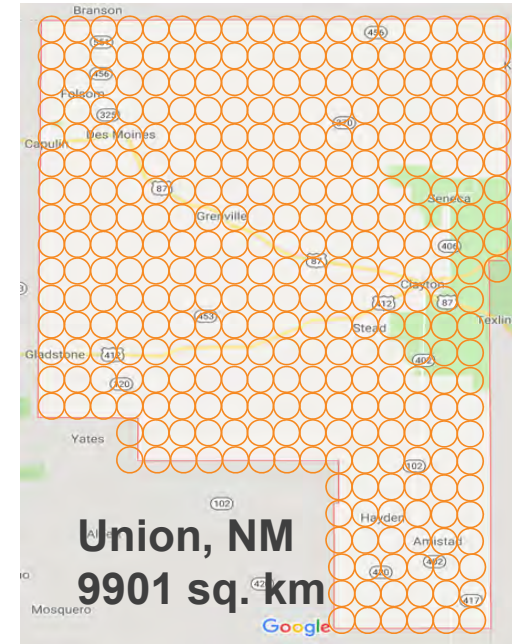
# Coverage Comparison



# Coverage Comparison



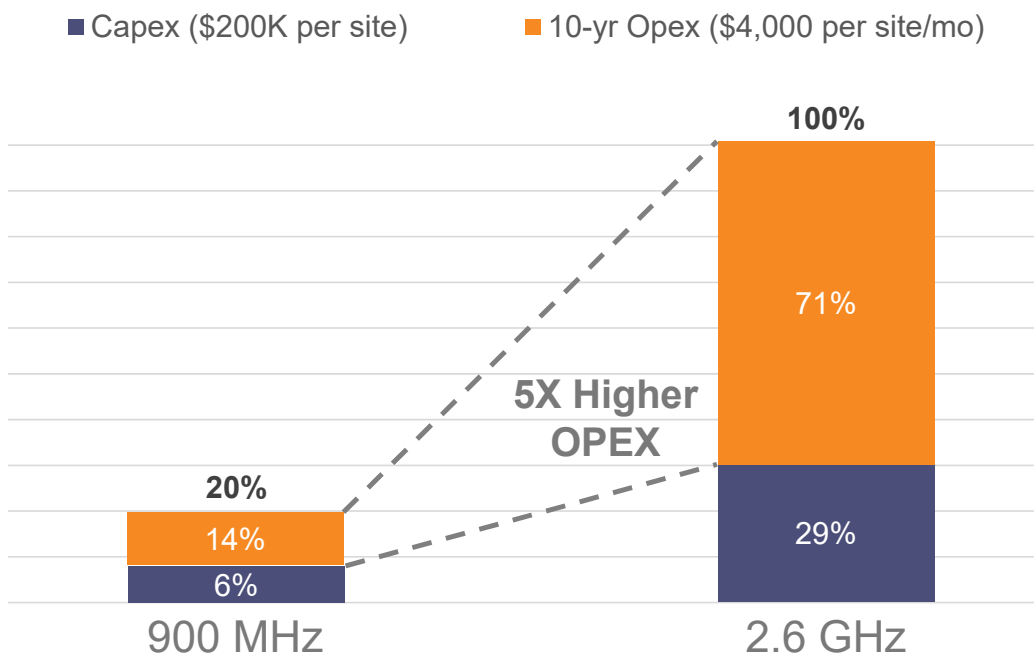
**900 MHz | 67 Sites**



**2.5 GHz | 333 Sites**

# Lower Total Cost of Ownership

**Mobile P-LTE Network (67 vs 333 sites)**  
Relative **10-Year** Capex & Opex of Low Band vs. Mid Band



# 900 MHz Part of a Global Standard

**18+**

Years driving 2G, 3G, 4G and 5G standards

**>1.2K**

Active Technical Specifications

**100,000s**

Member-driven technical contributions



**At-a-Glance**

**2,000+**

Man years in cumulative meeting time

**550+**

Individual member companies

**16**

Specialized technical working groups





# Global Standard Defined All IP



Source: Qualcomm and PDV

# Private Network Advantages



	Private Networks
Control	Prioritized Data, Design and Repair
Reliability	Built for Industrial Quality of Service
Resilience	Restoration in the Owner's Control
Economics	Reducing Operating Expenses
Security	Physically Separate: “Air-gap”

# Cost of an Outage

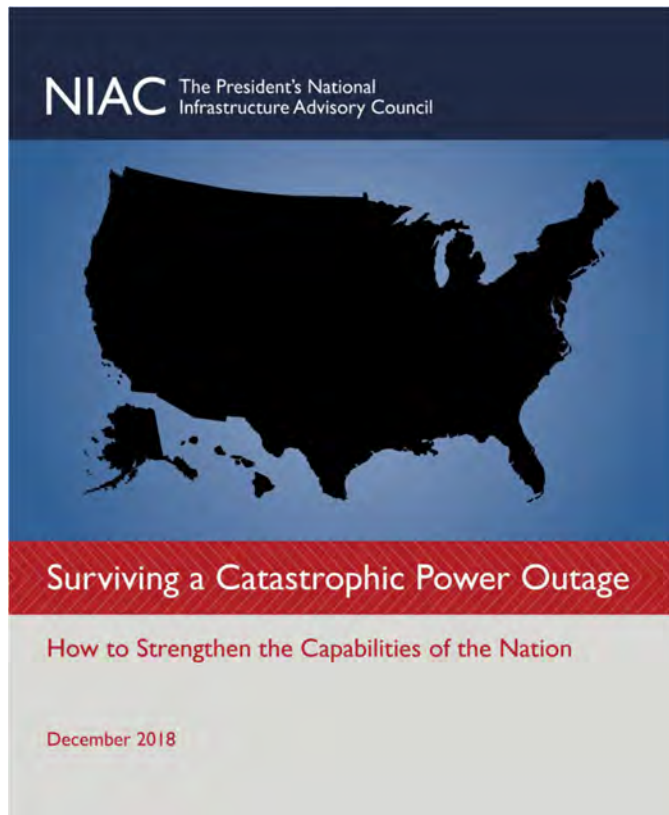
Customer	Cost per Event		
	Momentary	1 Hour	16 Hours
Medium & Large Commercial & Industrial	\$12,952	\$17,804	\$165,482
Small Commercial & Industrial	\$412	\$647	\$9,055
Residential	\$4	\$5	\$32

According to Schneider Electric, the combined U.S. economic costs of electric outages total **~\$80 Billion annually**

**Cost of an Outage per Event**

- Sourced from “Updated Value of Service Reliability Estimates for Electric Utility Customers in the US” by Lawrence Berkeley National Laboratory (2015)
- Meta-dataset includes 34 different datasets from surveys fielded by 10 different utility companies between 1989 and 2012, totaling over 105,000 observations
- Surveys include 44,328 observations for medium and large C&I customers, 27,751 for small C&I customers and 34,212 for residential customers

# Securing the Grid with Private LTE



## THE WALL STREET JOURNAL.

### America's Electric Grid Has a Vulnerable Back Door—and Russia Walked Through It

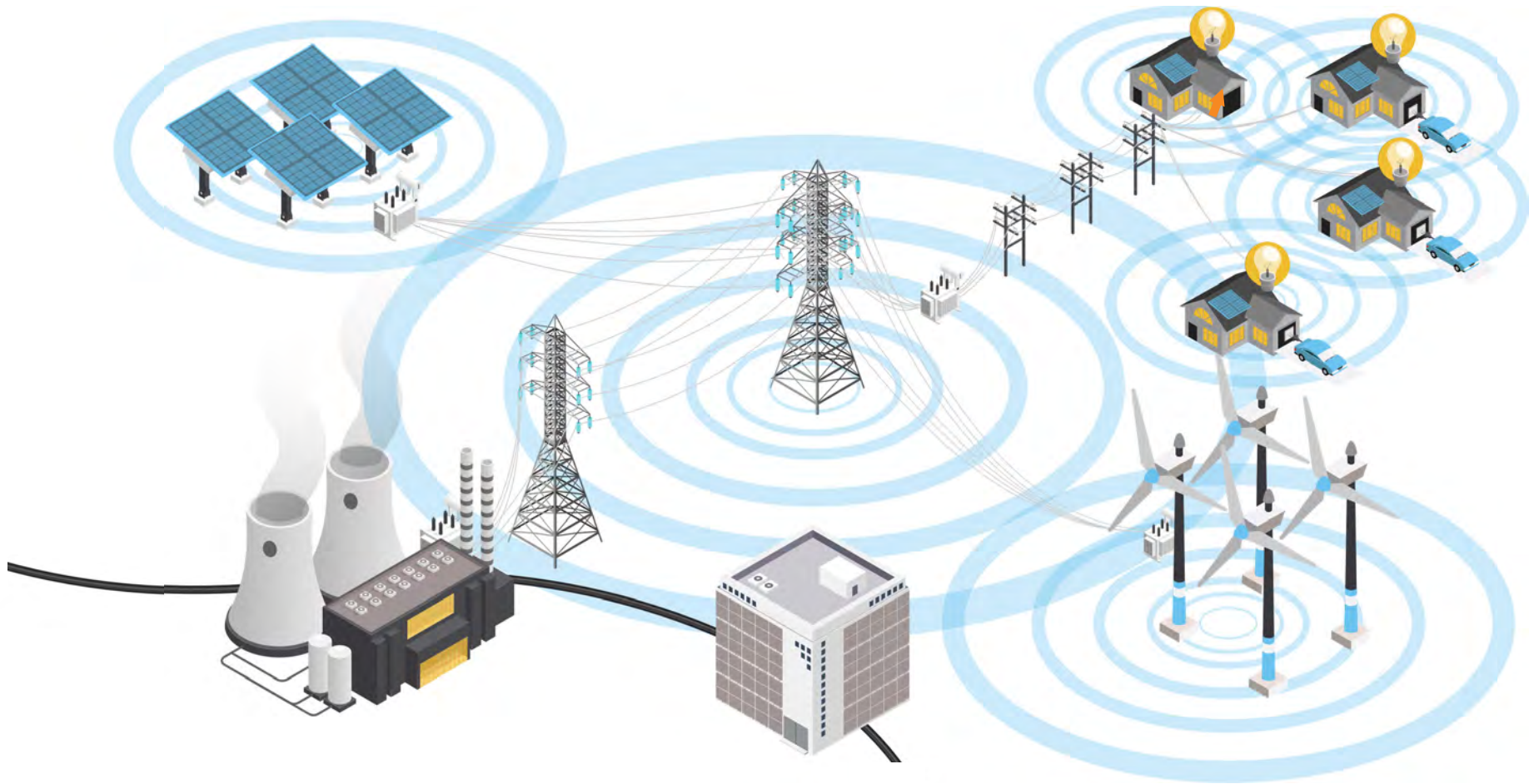
A Wall Street Journal reconstruction of the worst known hack into the nation's power system reveals attacks on hundreds of small contractors



By Rebecca Smith and Rob Barry, Jan. 10, 2019 11:18 a.m. ET

One morning in March 2017, Mike Vitello's work phone lighted up. Customers wanted to know about an odd email they had just received. What was the agreement he wanted signed? Where was the attachment?

# Distributed Energy Resources





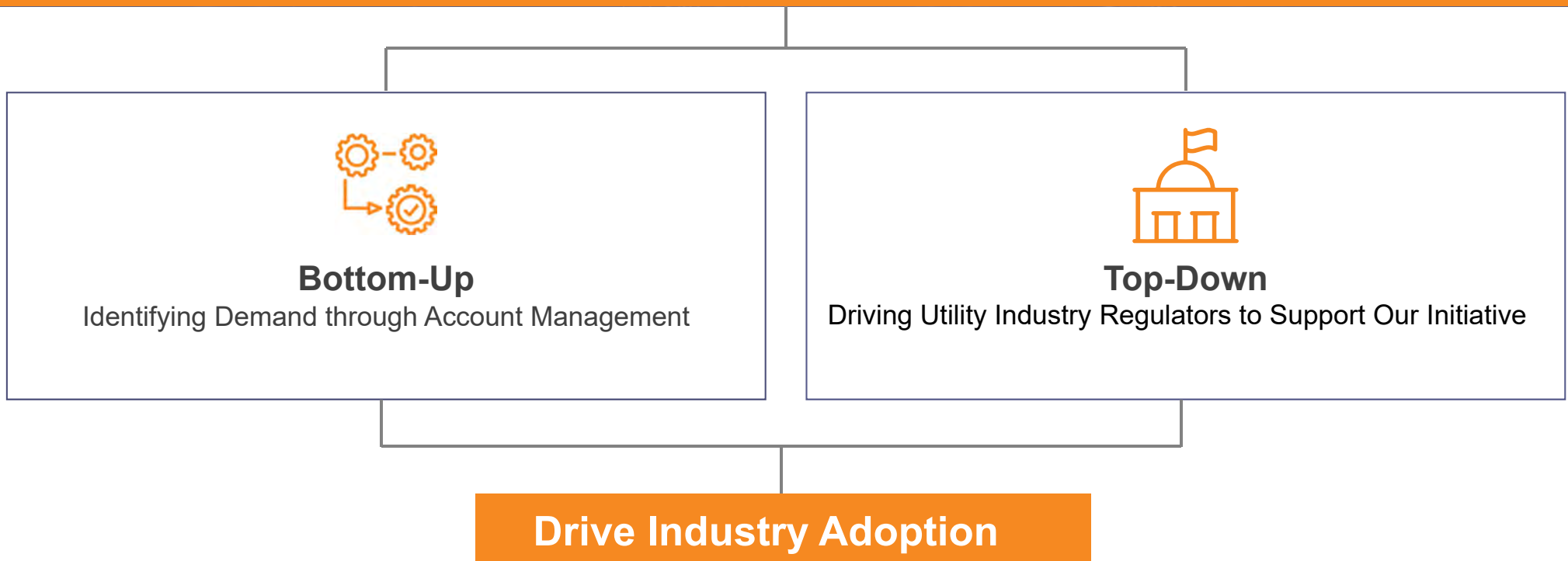
# Agenda



- 1 Introduction
- 2 FCC Update
- 3 Market Opportunity
- 4 Product Offering
- 5 Go To Market Strategy**
- 6 Business Model

# Two-Pronged Approach

Our “Go to Market” strategy utilizes both Bottom-Up and Top-Down approaches



# Federal and State Activities

## Influencers



DOE



FERC

**NIST**  
National Institute of  
Standards and Technology

**NREL**  
NATIONAL RENEWABLE ENERGY LABORATORY

 Sandia  
National  
Laboratories

 **OAK  
RIDGE**  
National Laboratory

## Policy Enactors



NARUC



Rate Case Process



Utility

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# Federal Funding for Grid Modernization

**\$4.5B**  
Initial Government  
Investment



**\$5.5B**  
Private Capital  
Funding

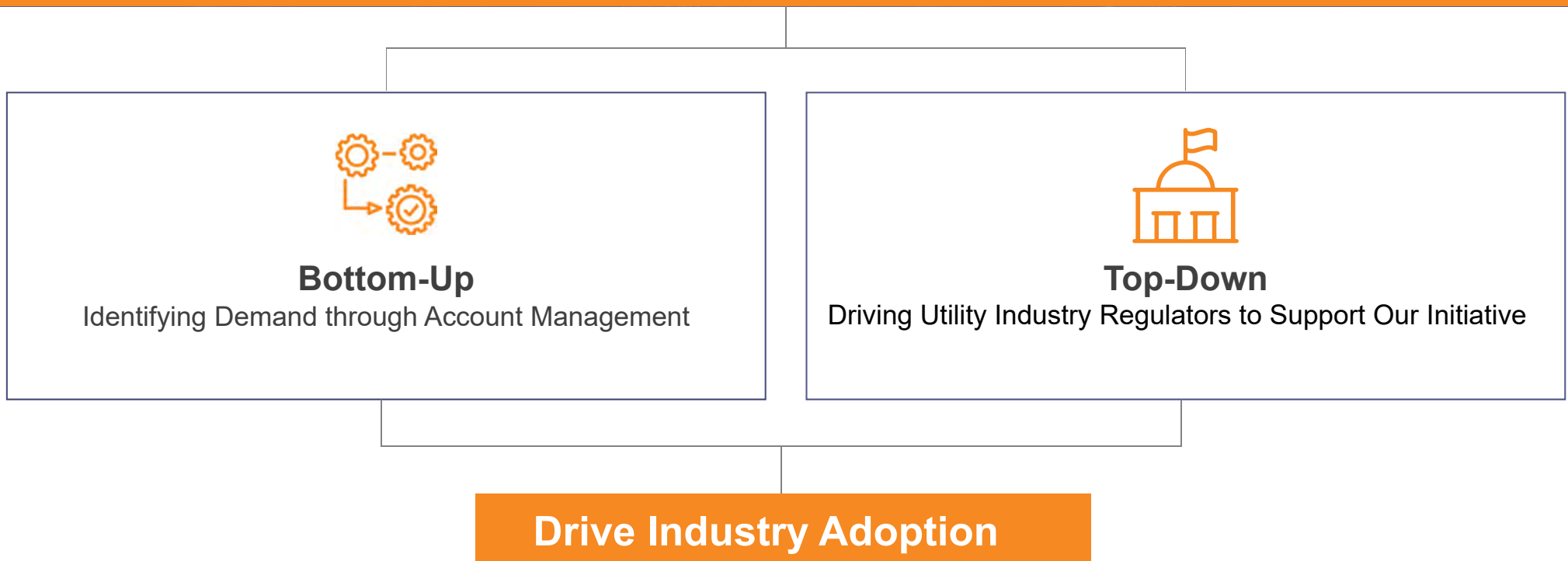


**Public government funding** attracted additional private capital and **was a catalyst** for accelerated smart grid deployment



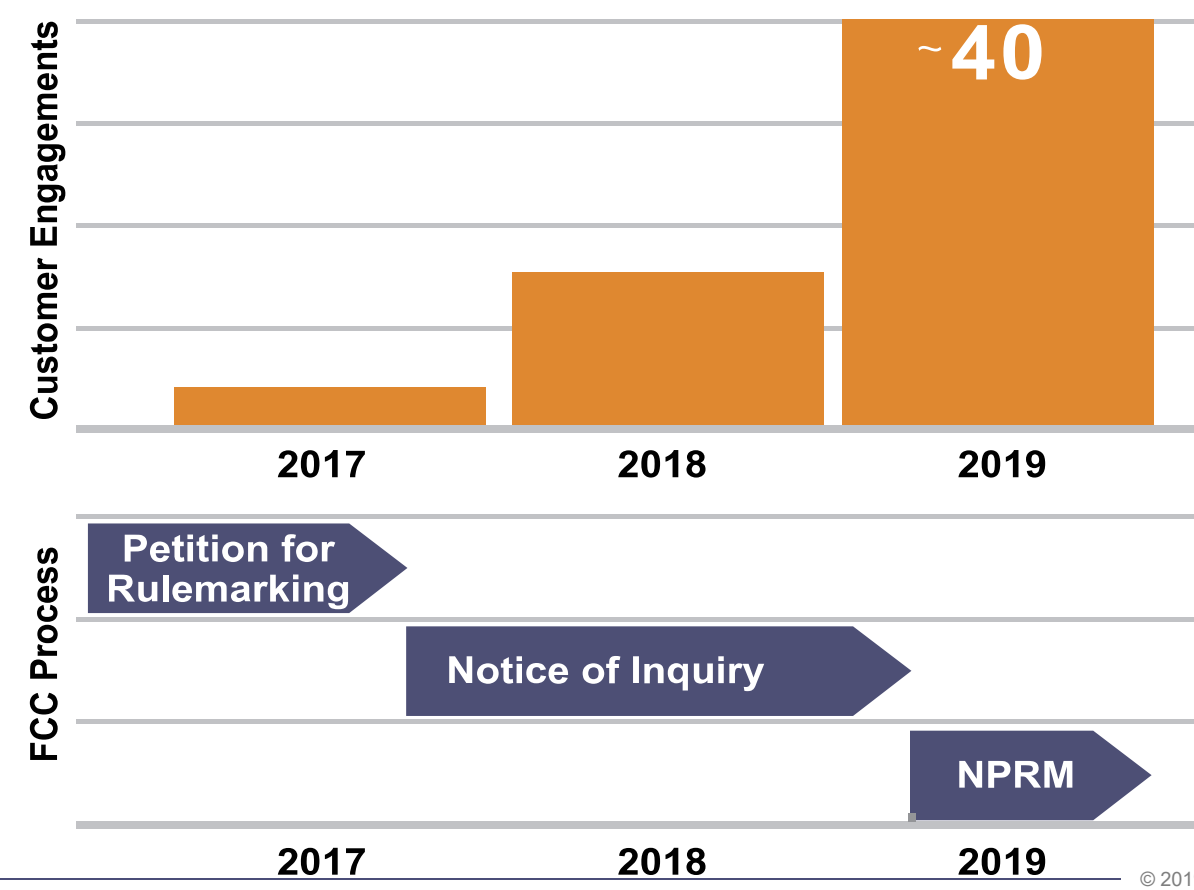
# Two-Pronged Approach

Our “Go to Market” strategy utilizes both Bottom-Up and Top-Down approaches.



# Parallel Progress

# Customer Engagements: Broadband for CI/Enterprise



# Falling Conductor Protection

Requires low latency and high bandwidth from a broadband network to quickly de-energize before striking the ground



# Band 8: 4,200+ Devices and Counting

 Devices/ Sensors	 Recloser Controller	 Cap Bank Controller	 Fusesaver	 Smart City	 Lighting	 Water Pressure	 Controllers	 Traffic Monitoring	 Smart Parking
	 Wireless Gateways	 Nokia 7705 SAR-Hc	 Cisco IR 829		 AirLink® RV50X	 Mobile Workforce	 Vehicle Monitoring		

## Critical Infrastructure Band 8 Device Suppliers

Cisco Systems

Ericsson

General Electric

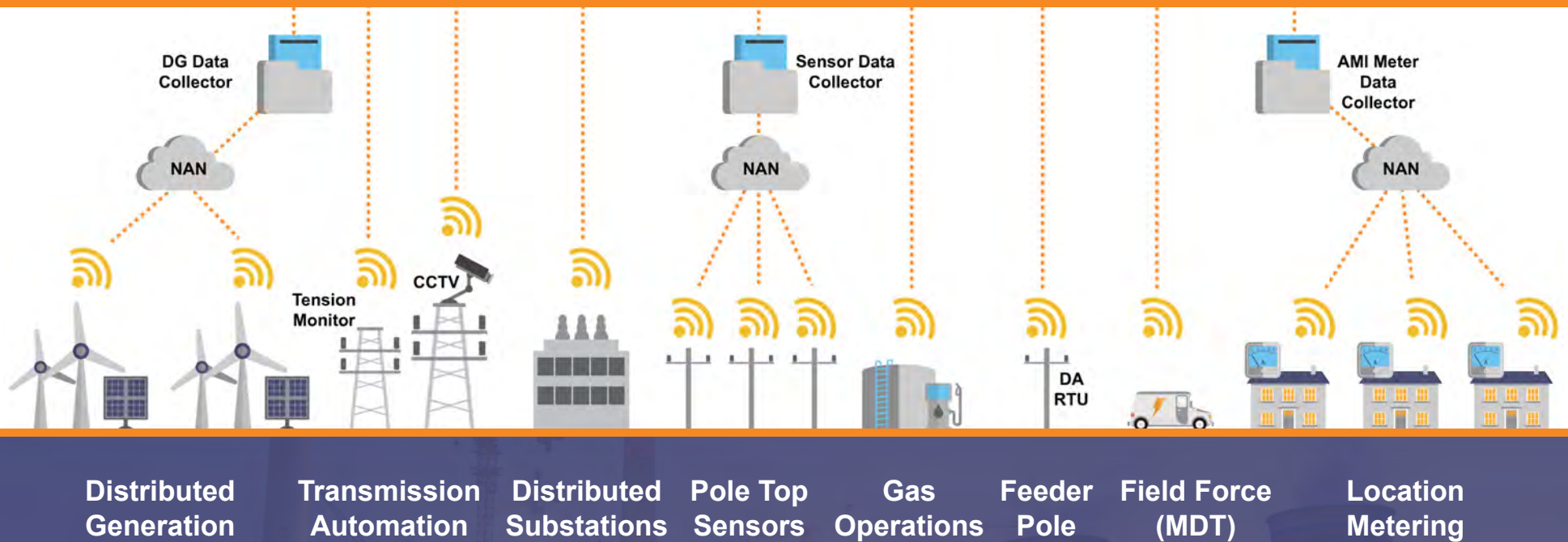
Nokia

Sierra Wireless



# A Single Field Area Network (FAN)

## Ameren Private LTE Network





## **Southern Linc Leads the Way**

as one of 2018's Top 10 Utilities in Economic Development

# PDV Forms Utility Industry Alliance



- Information Sharing
- Collaboration
- Increase P-LTE Interest
- Drive Scale and Innovation



Utilities

**Ameren • National Grid • Evergy  
Southern Linc • Xcel Energy**

Vendors

Burns & McDonnell

Cisco Systems

Encore Networks

Ericsson

Federated Wireless

General Electric

Motorola Solutions

MultiTech Systems

Sierra Wireless

4RF

Council Rock

pdvWireless

Sonim

Tait Communications

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# NREL: High-Impact Project

## Industry Advisory Board Members

*Consumers Energy*

EVERSOURCE



Hawaiian Electric  
Maui Electric  
Hawai'i Electric Light



**evergy**

**Xcel Energy**

**pdv** WIRELESS

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## In Summary

1

**Spectrum Opportunity**

2

**Growing Market**

3

**Customer Demand**

4

**Unique and Valuable Business Model**

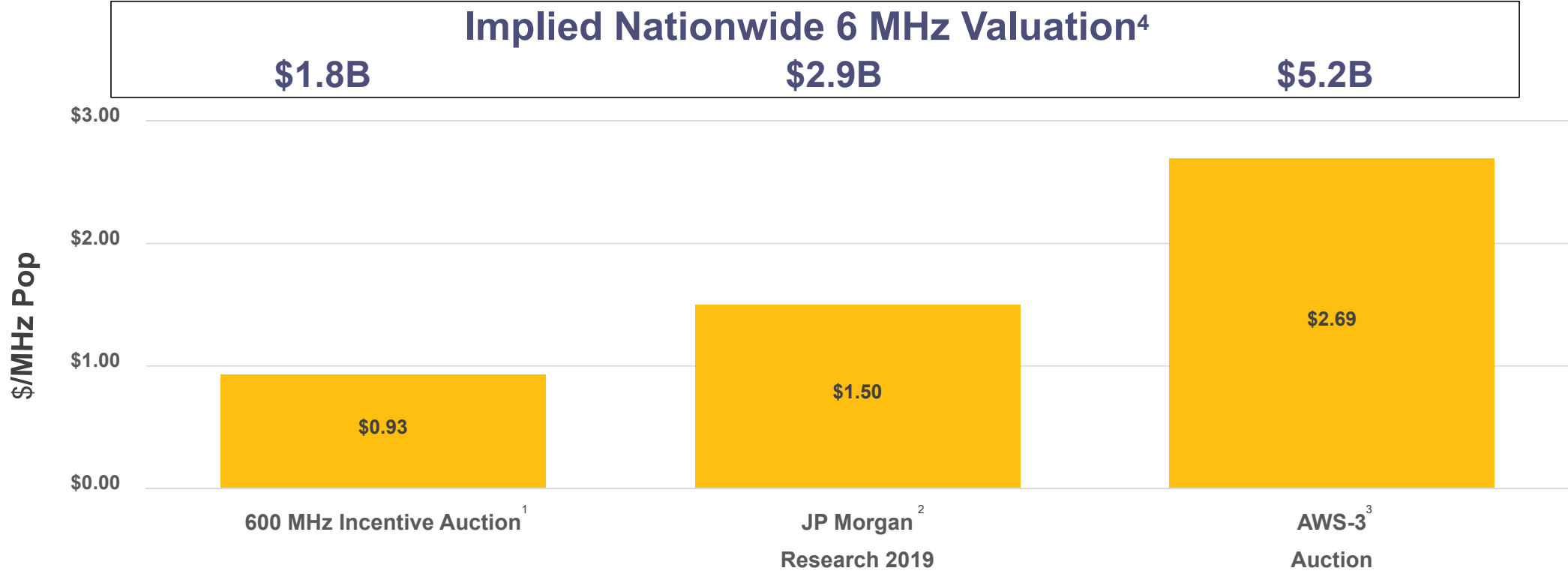


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# Spectrum Comparables



<sup>1</sup> \$/MHz Pop value is the national average of FCC auction 1002 covering all geographies and licenses in the auction  
<sup>2</sup> \$/MHz Pop value is the national average value of < 1 GHz spectrum reported in 1/15/2019 JM Morgan Report "Spectrum Overview: Carrier by Carrier Spectrum Value & Strategy Across the Wireless Industry"  
<sup>3</sup> \$/MHz Pop value is the national average of FCC auction 97 covering all geographies and licenses in that auction  
<sup>4</sup> Implied Valuations calculated by multiplying 10MHz nationwide valuation by 60% to reflect 6MHz position.

# Long-Term Lease Attributes

**20+ Year Lease Terms**

**High Credit Quality Customer Base**

**Annual Escalators**

**Renewal Options**

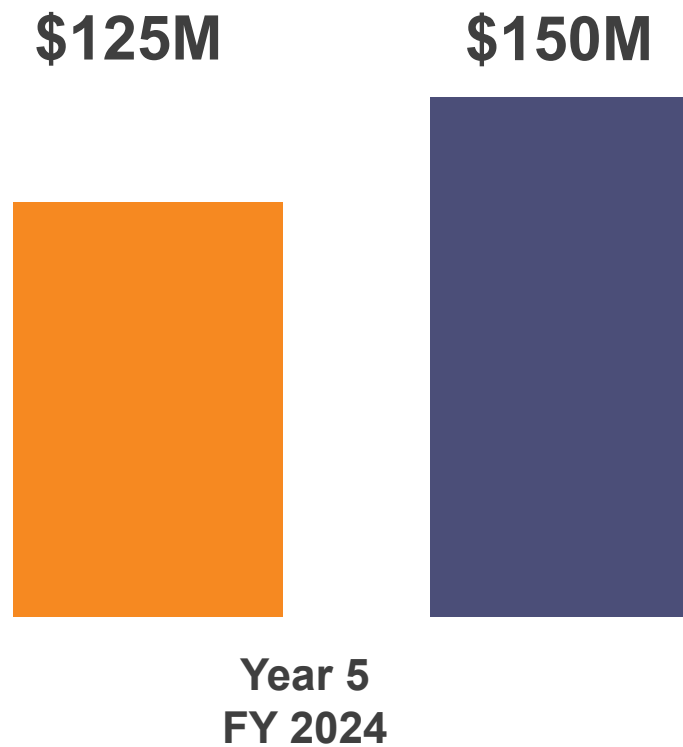
**Low Servicing Cost**

**Portfolio of Investment  
Grade Leases with Long  
Term Escalating Cash Flows**

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# PDV Contracted Revenue\* Projection

## Annual Run Rate



**Year 5  
FY 2024**

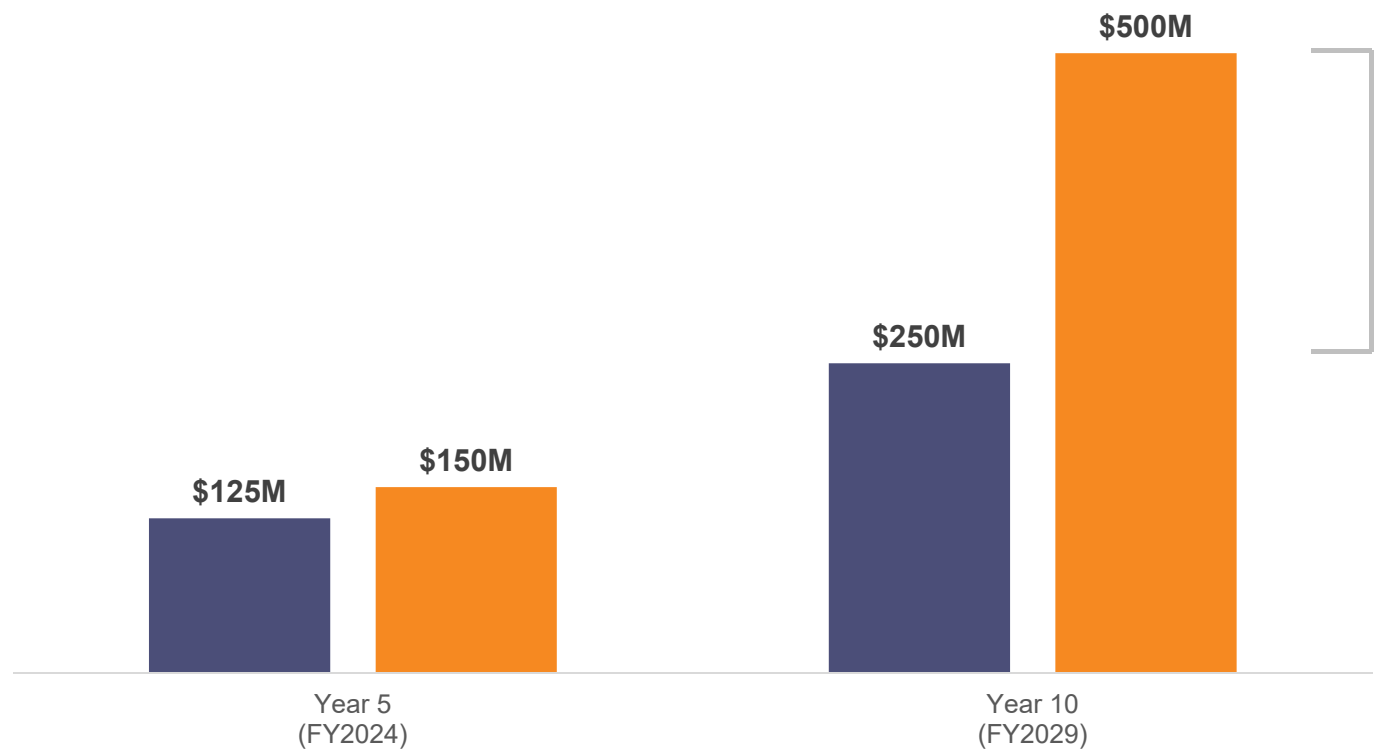
\*Contracted Revenue is the full value of contracted annual lease payments signed as of the indicated date. This figure may differ from actual revenue received at the indicated date due to the timing of clearing each Contracted lease market of incumbent licensees and if all incumbent licensees in Contracted lease markets haven't fully completed their retuning process.

© 2019 PDVWIRELESS



# PDV Contracted Revenue\* Projection

Annual Run Rate



## Additional Opportunities

Increased Utility Penetration

Penetration into Other Vertical Markets

Network of Networks and Other Services

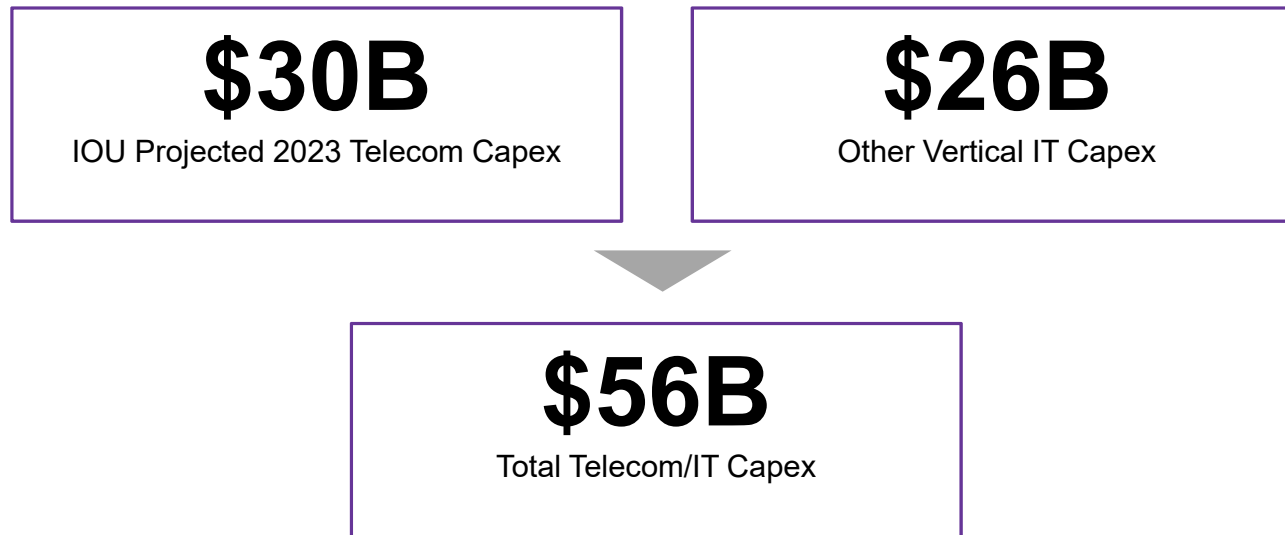
Other Spectrum Opportunities

\*Contracted Revenue is the full value of contracted annual lease payments signed as of the indicated date. This figure may differ from actual revenue received at the indicated date due to the timing of clearing each Contracted lease market of incumbent licensees and if all incumbent licensees in Contracted lease markets haven't fully completed their retuning process.



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# Potential Customer Telecom/IT Capital Spend



**PDV's spectrum lease offering represents a fraction of capital spend**

# Relocation of Incumbents



**L**

## Large Systems

**Multi-site**

**~60 systems**

**M**

## Medium Systems

**Typically single site**

**~120 Systems**

**S**

## Small Systems

**Single Site**

**~220 systems**

Excludes MTA licensees and railroads and systems with 65+ sites

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# Key Metrics



## Negative Cash Flow

Approximately \$30 Million  
annually for 2-3 years



## Retuning

Estimated at \$90-120 Million  
over 3 years



## EBITDA Margins

Run Rate Approaching 80% by  
FY2024



## Cash on Hand (3/31/19)

\$77 Million



## Estimated Funding Needs

\$100-150 Million

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## Outlook for Current Fiscal Year:

● Obtain Report and Order

● Formalize and Start Executing on Our Retuning Plan

● Explore Options to Fund our Business

● Signing at Least One Commercial Agreement

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# pdvWireless Board of Directors

## **Paul Saleh**

Executive Vice President and  
Chief Financial Officer of DXC  
Technology (NYSE: DXC)

## **T. Clark Akers**

Managing Director, SBIC Funds  
Placement Division  
at FBR & Co.

## **Mark Hennessy**

34-year career at IBM holding  
executive management and  
leadership positions

## **Rachelle B. Chong, J.D.**

CA PUC Comm. 2006 - 2009  
& FCC Comm. 1994-1997

## **Greg W. Cominos**

18-year career at General  
Electric (NYSE: GE) focused on  
energy, oil & gas

## **Singleton B. McAllister**

Extensive legal background;  
Senior positions held in the U.S.  
House of Representatives

**Brian McAuley**  
**Chairman**

## **Greg Haller**

29-year career at Verizon  
in operations, sales, marketing  
and solutions

**Morgan O'Brien**  
**Vice Chairman**

**7 Independent**

**2 Internal**





pdv WIRELESS®