

Global Trends in Smart Metering



Agenda



1. IBM's Smart Metering Position

2. Global Smart Metering Trends

3. Centralized Smart Metering Services

4. Case Study: Ontario

5. Case Study: Texas

The size, depth and breadth of IBM's contributions to smart meter projects confirms IBM as a smart meter leader



IBM has supported smart meter programs representing:

- 80 million installed or planned electric meters globally, supported by IBM
- Over 70 percent of the installed meters in North America
- In excess of 80 utilities, globally

IBM smart metering engagements span the globe

North America:

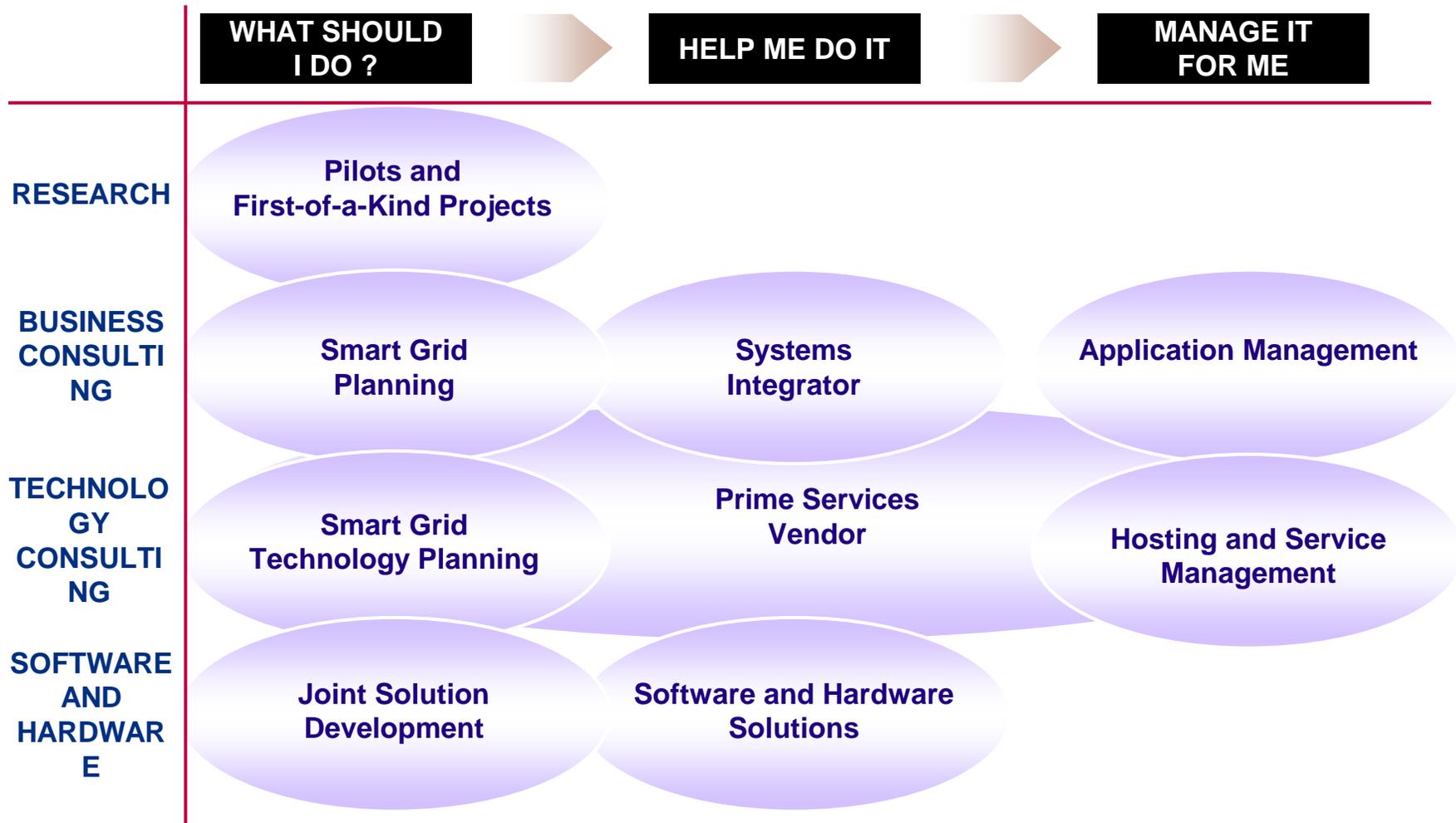
- American Electric Power
- Austin Energy
- BC Hydro
- BELCO
- CenterPoint Energy
- Con Edison
- Consumers Energy
- CPFL Energia
- Entergy
- First Energy
- Florida Power & Light
- Hydro One
- Hydro Ottawa
- IESO (Ontario)
- London Hydro
- NV Energy
- Oncor
- Ontario Energy Board
- Pacific Gas & Electric
- Pacific Northwest National Laboratory
- PECO
- Pepco Holdings Inc
- Progress Energy
- Smart Meter Texas
- Southern California Edison
- Toronto Hydro

Europe:

- | | |
|-------------------|----------------------------|
| A2A - AEM Torino | Enemalta |
| A2A - ASM Brescia | Enel |
| Alliander | ESB Networks |
| EDF (France) | Göteborg Energi |
| EDF Energy (UK) | MVV Energie AG |
| EDP | Nuon |
| EnBW | Oxxio |
| Endesa | RWE npower |
| | Scottish & Southern Energy |
| | 30 Italian distributors |

- Country Energy
- Energy Australia
- Western Power

IBM Smart Metering Engagement Models



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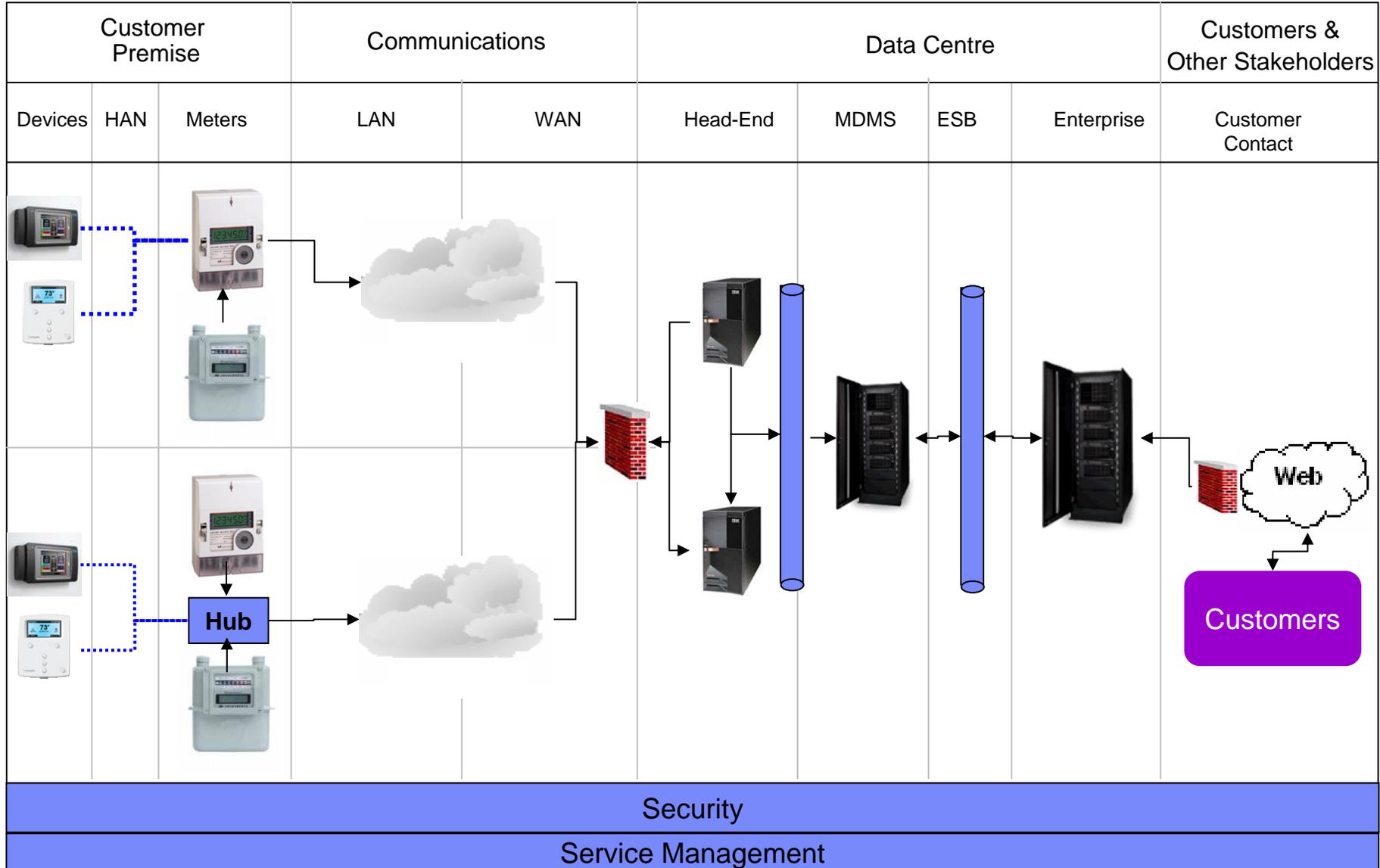
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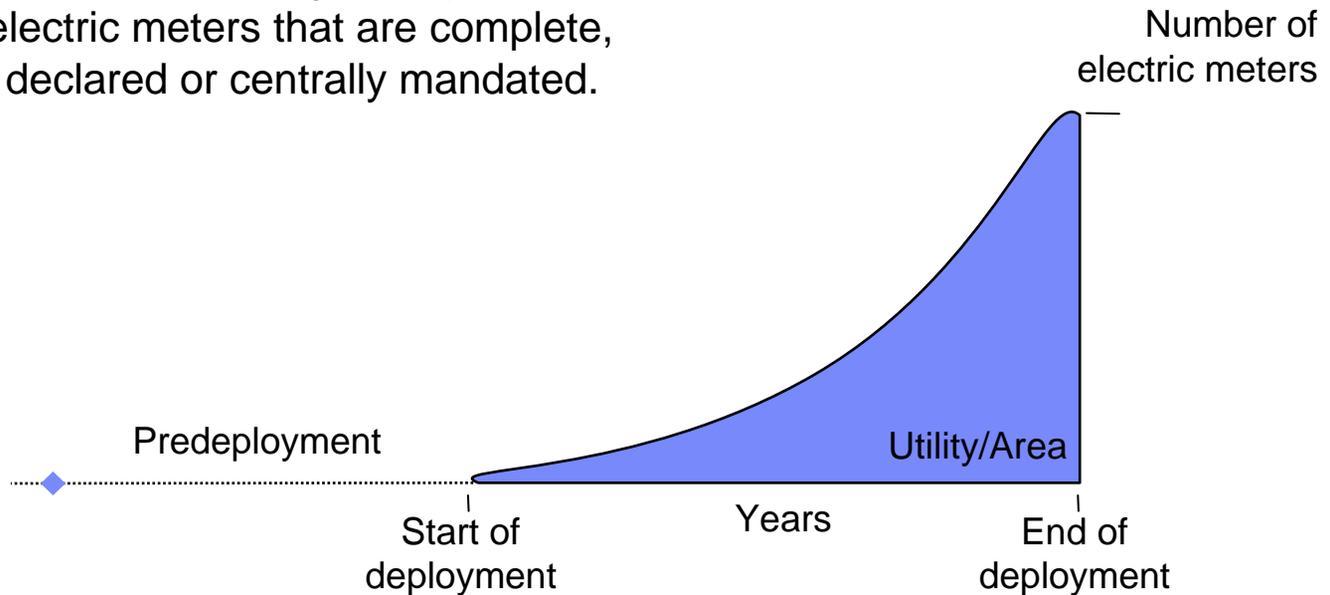
Smart Metering Definition



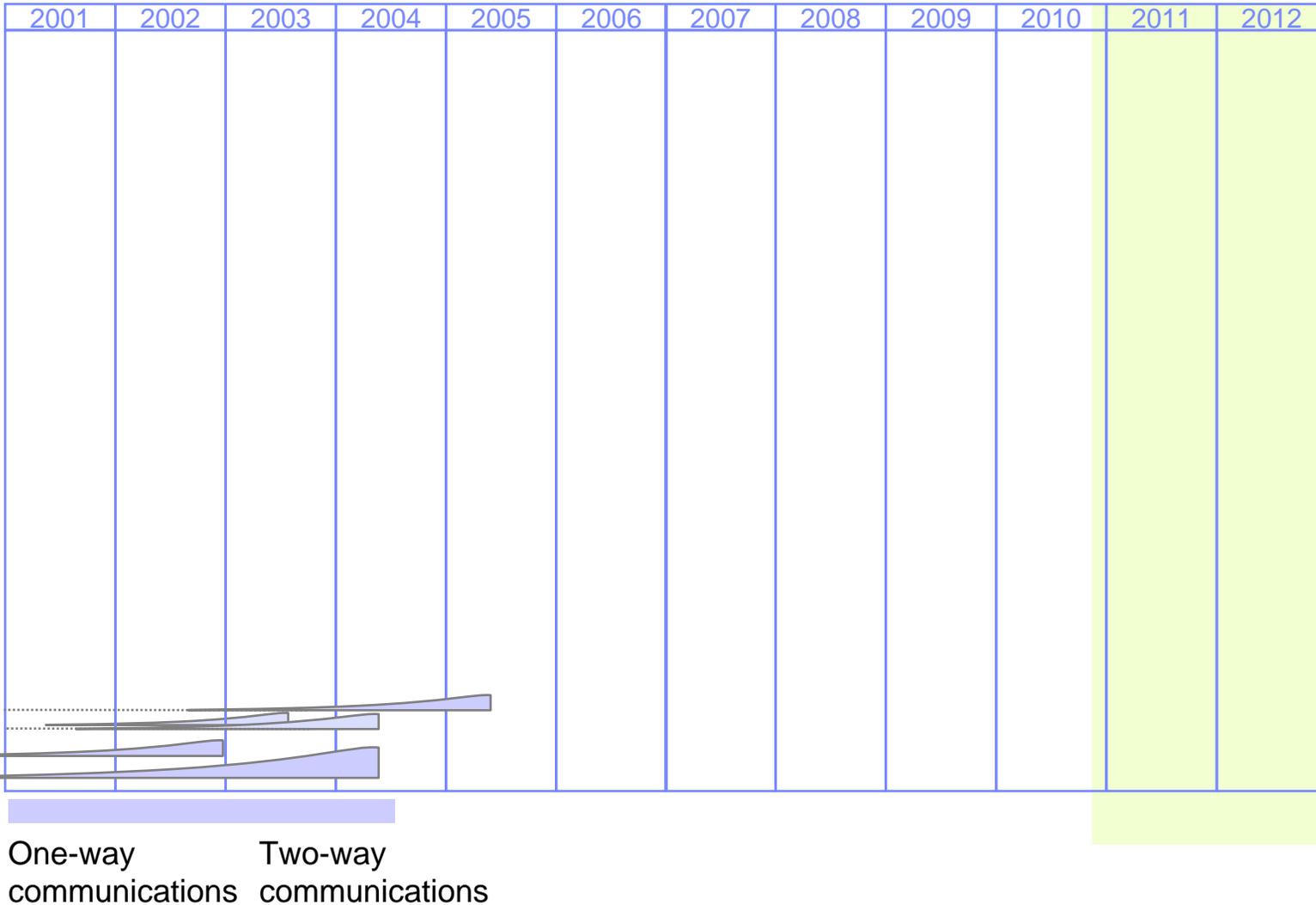
Legend

Inclusion criteria:

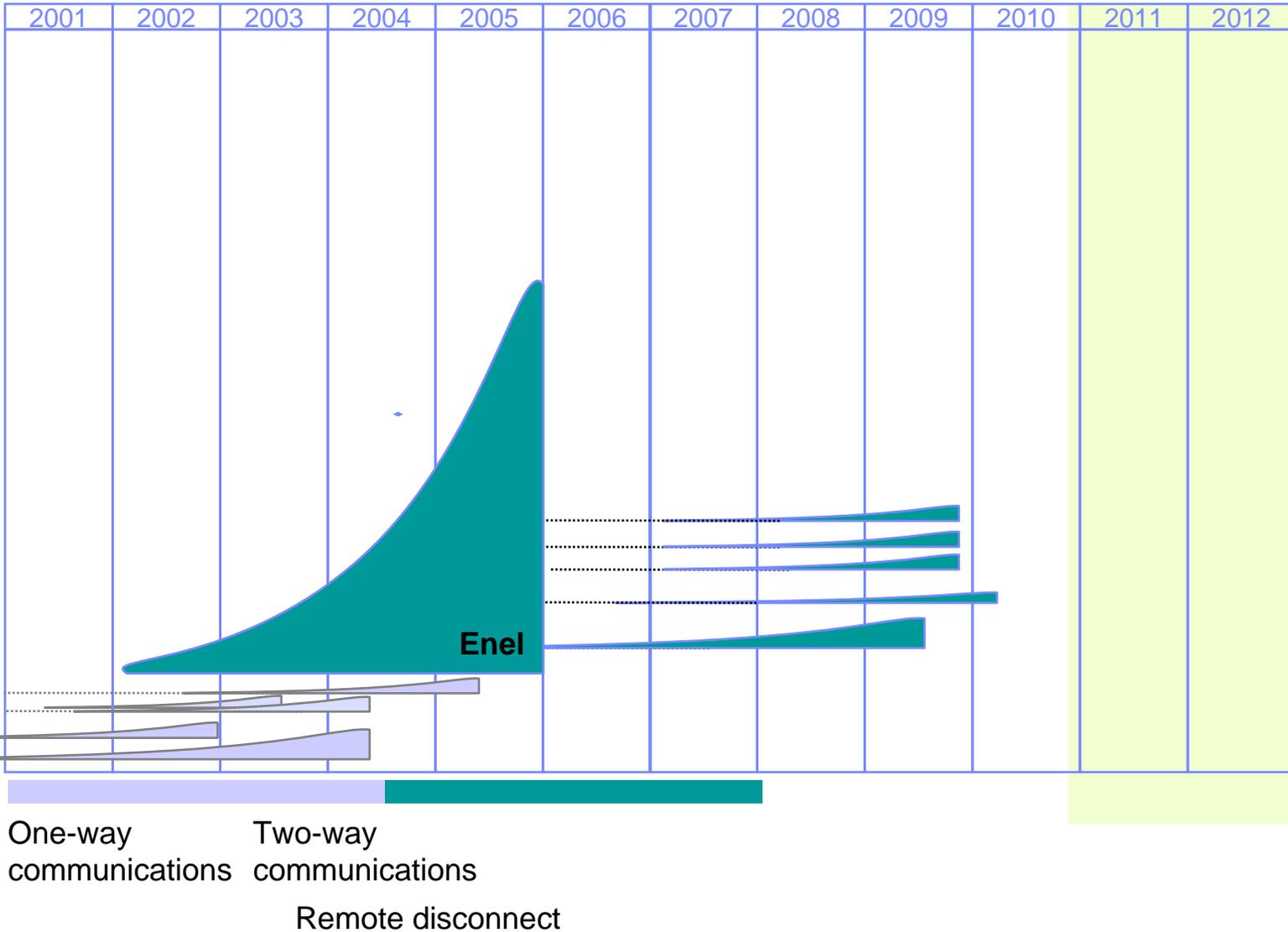
Fixed-network, advanced metering deployments of over 500,000 electric meters that are complete, ongoing, publicly declared or centrally mandated.



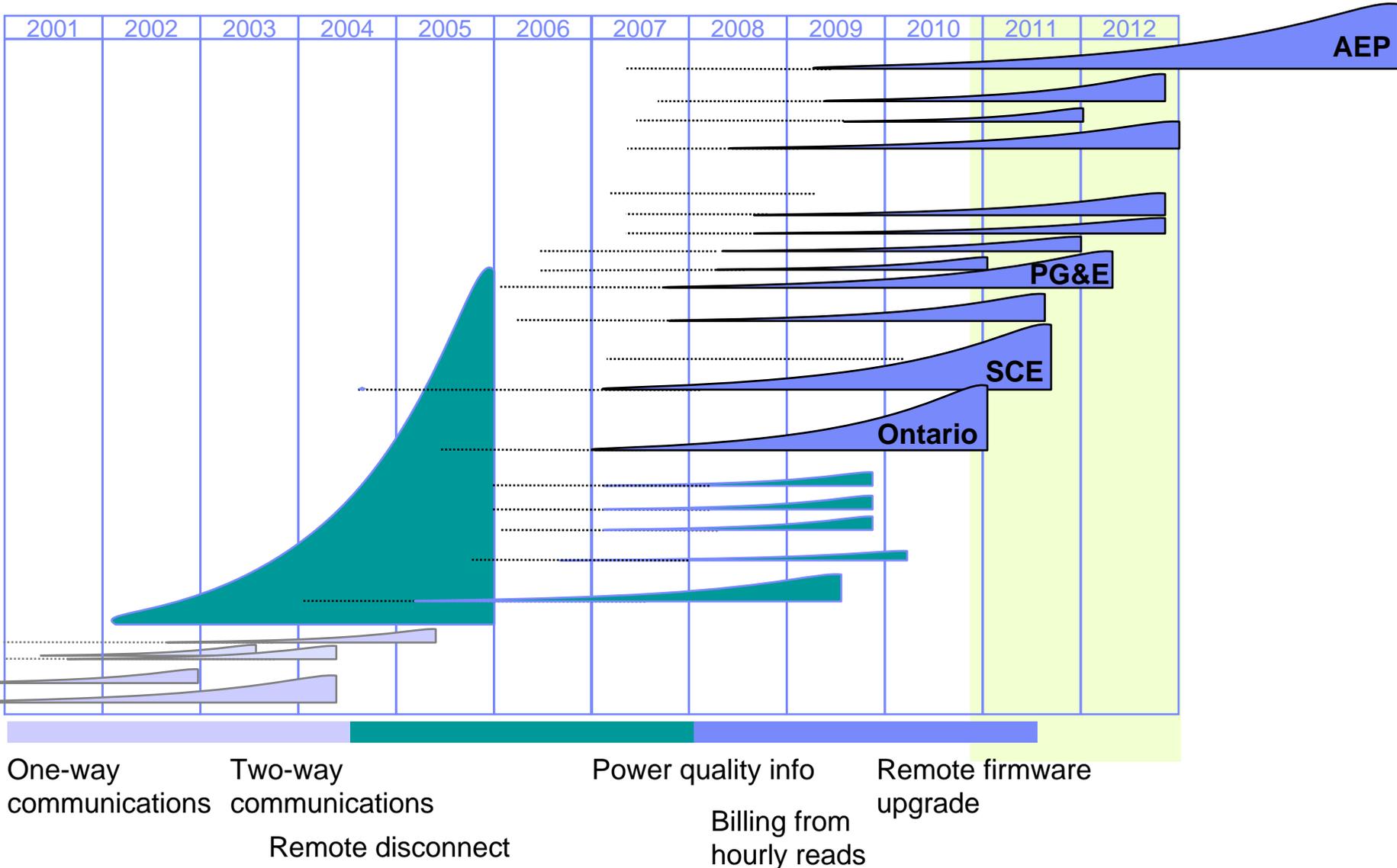
First Generation Smart Metering Begins the US



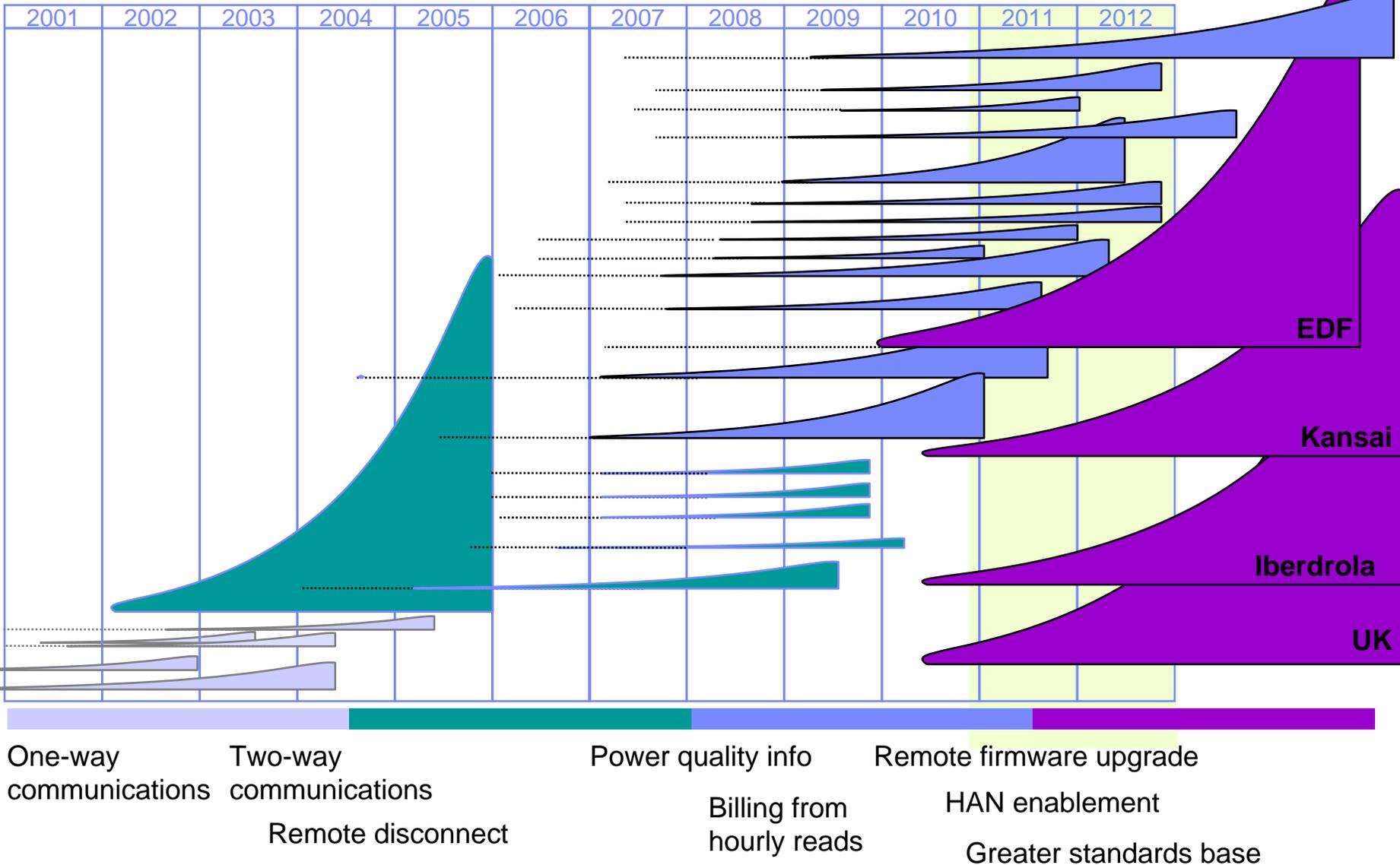
Enel Proves the 2nd Generation



The 3rd Generation in North America



The Next Generation?



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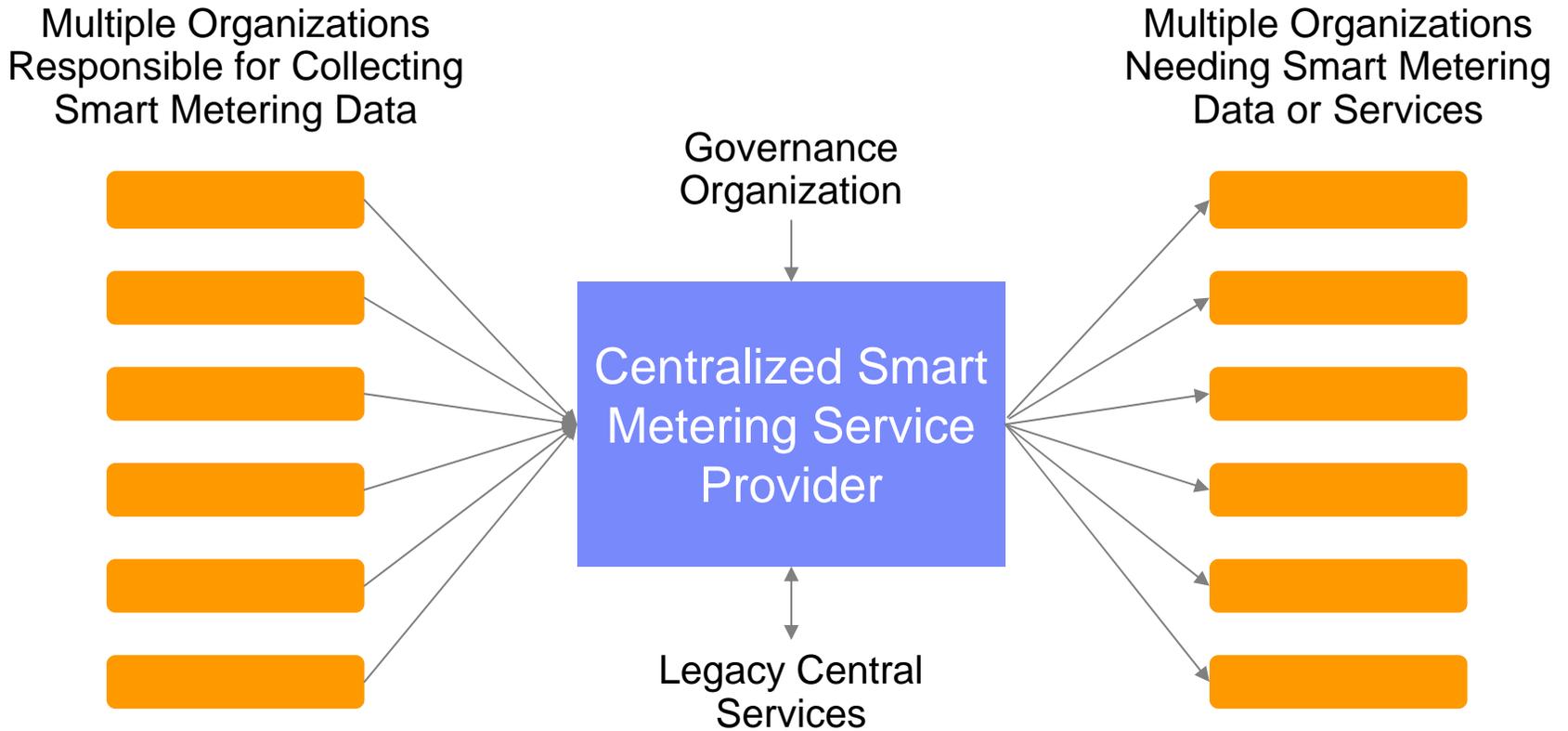
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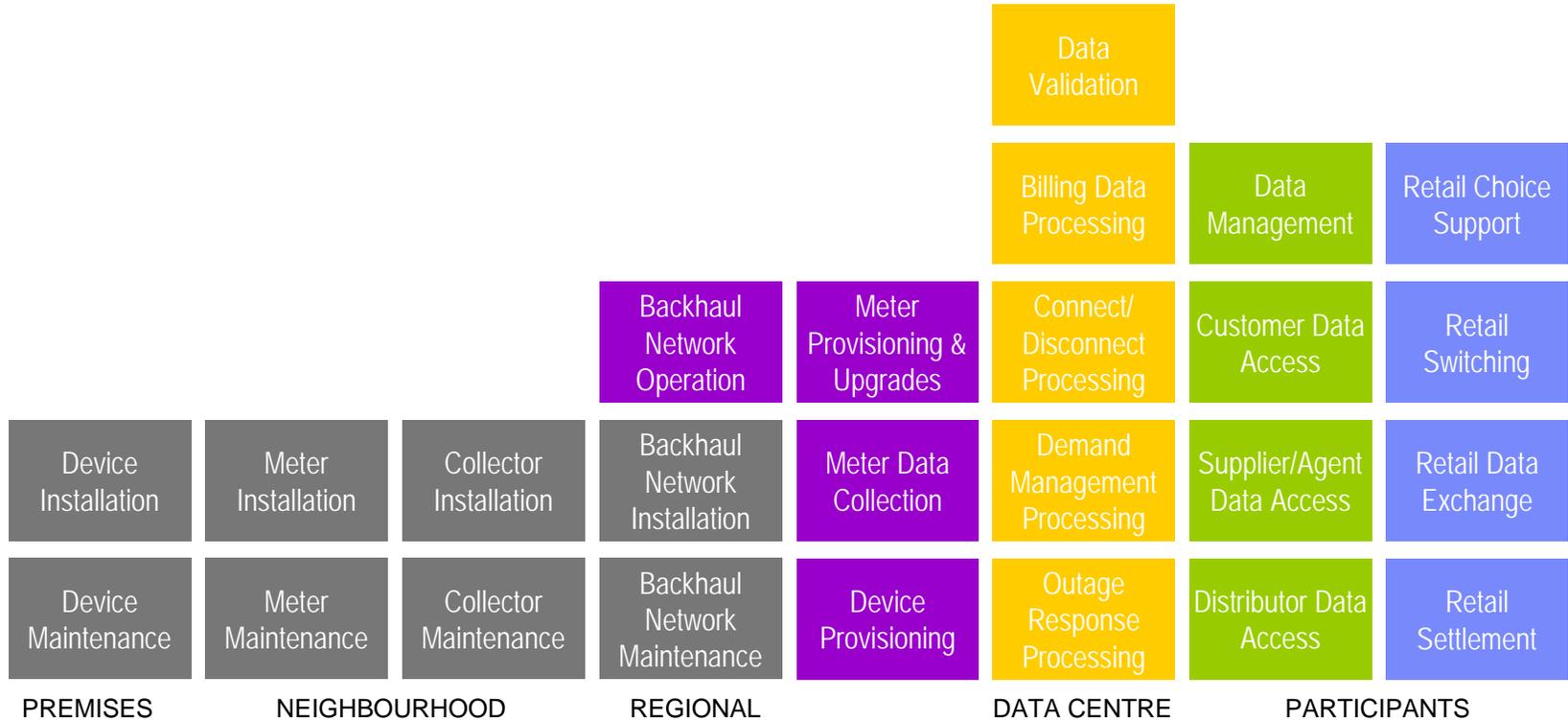
4. Case Study: Ontario

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Context of Centralized Smart Metering Services



Functional Model for Centralized Smart Metering Services



Field Services



Meter Operations



Data and Event Processing



Data and Access Management



Retail Choice Functions

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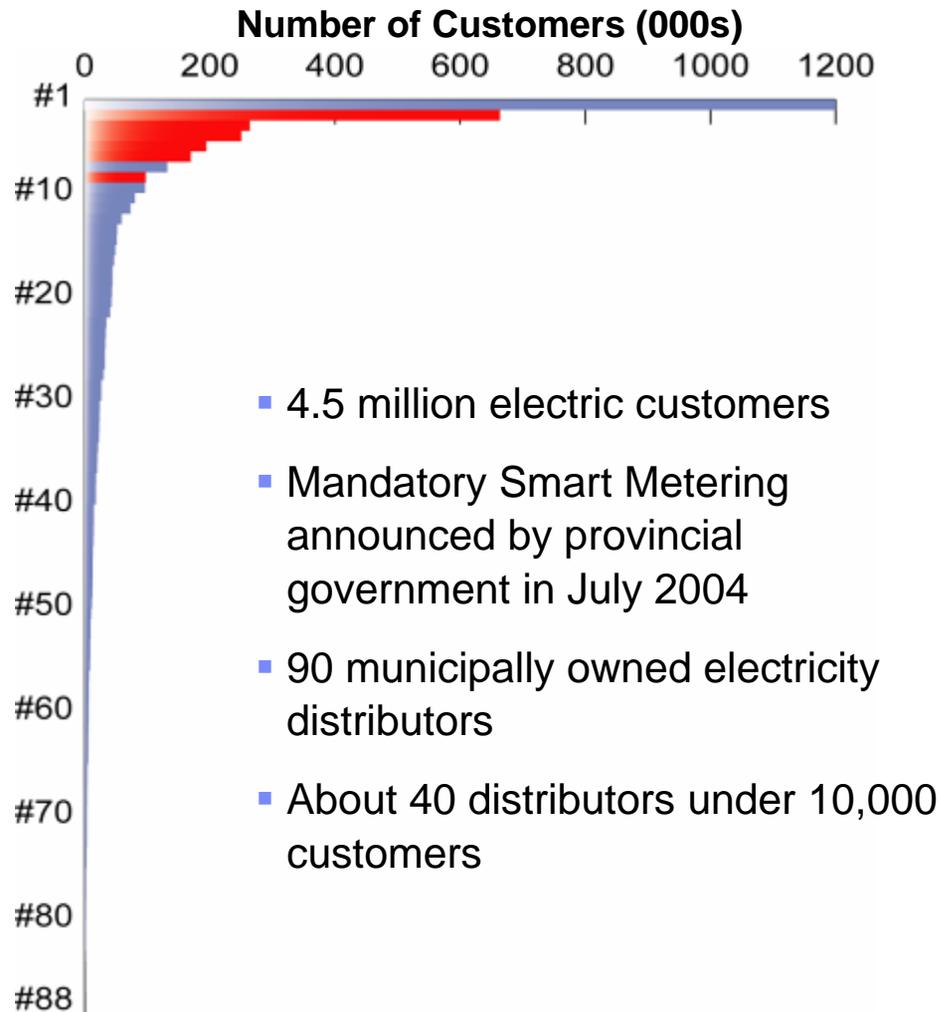
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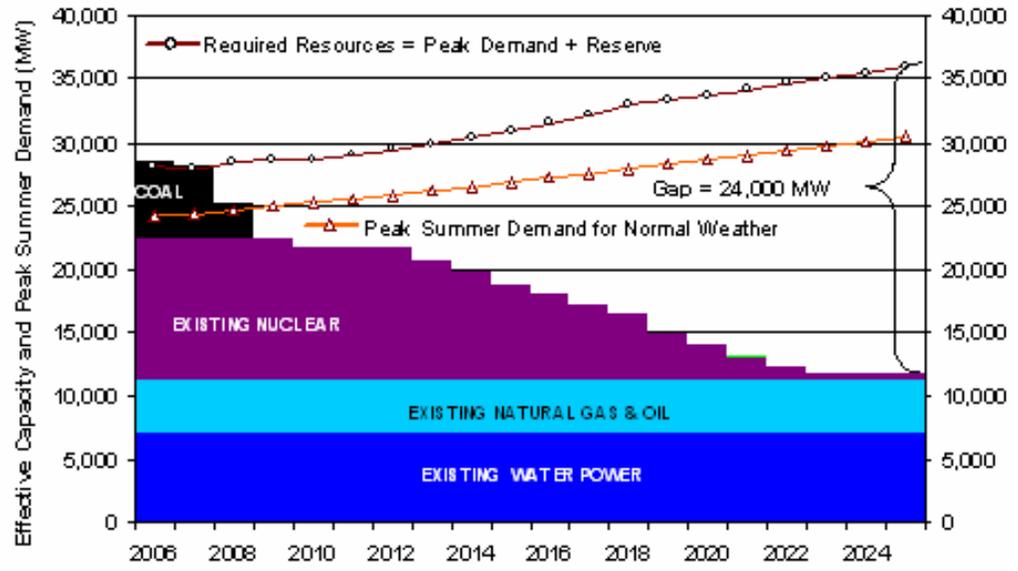
5. Case Study: Texas

Ontario Electricity Structure

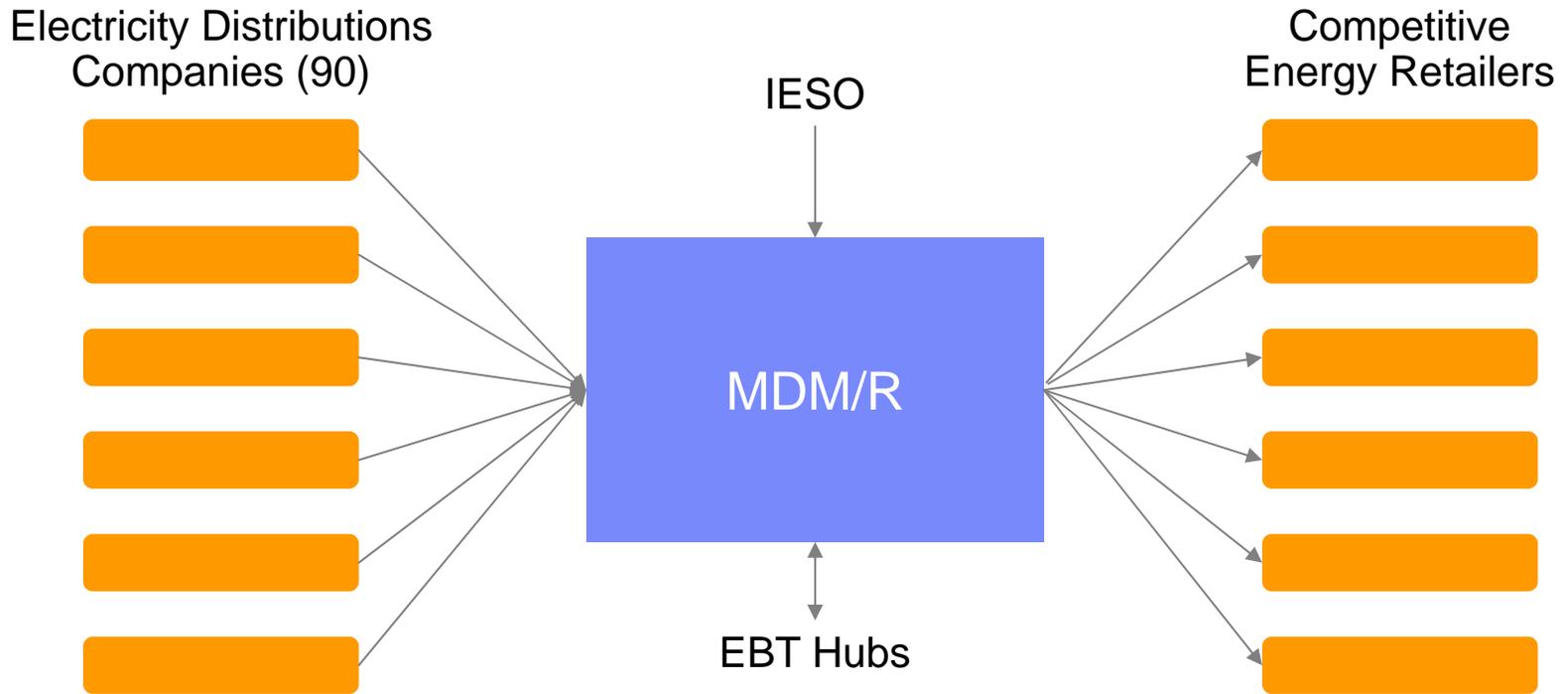


Ontario's electricity supply challenges - Past View

- Looming capacity shortages
 - Aging nuclear plants
 - Lack of generation investment during restructuring
 - Need to secure 25,000 megawatts worth of generating capacity in the next 15 years
 - \$25 to \$40 billion investment
 - Immediate needs in the next few years
- Combined with
 - Import capacity limited to 4,000MW
 - A political decision to retire all coal plants



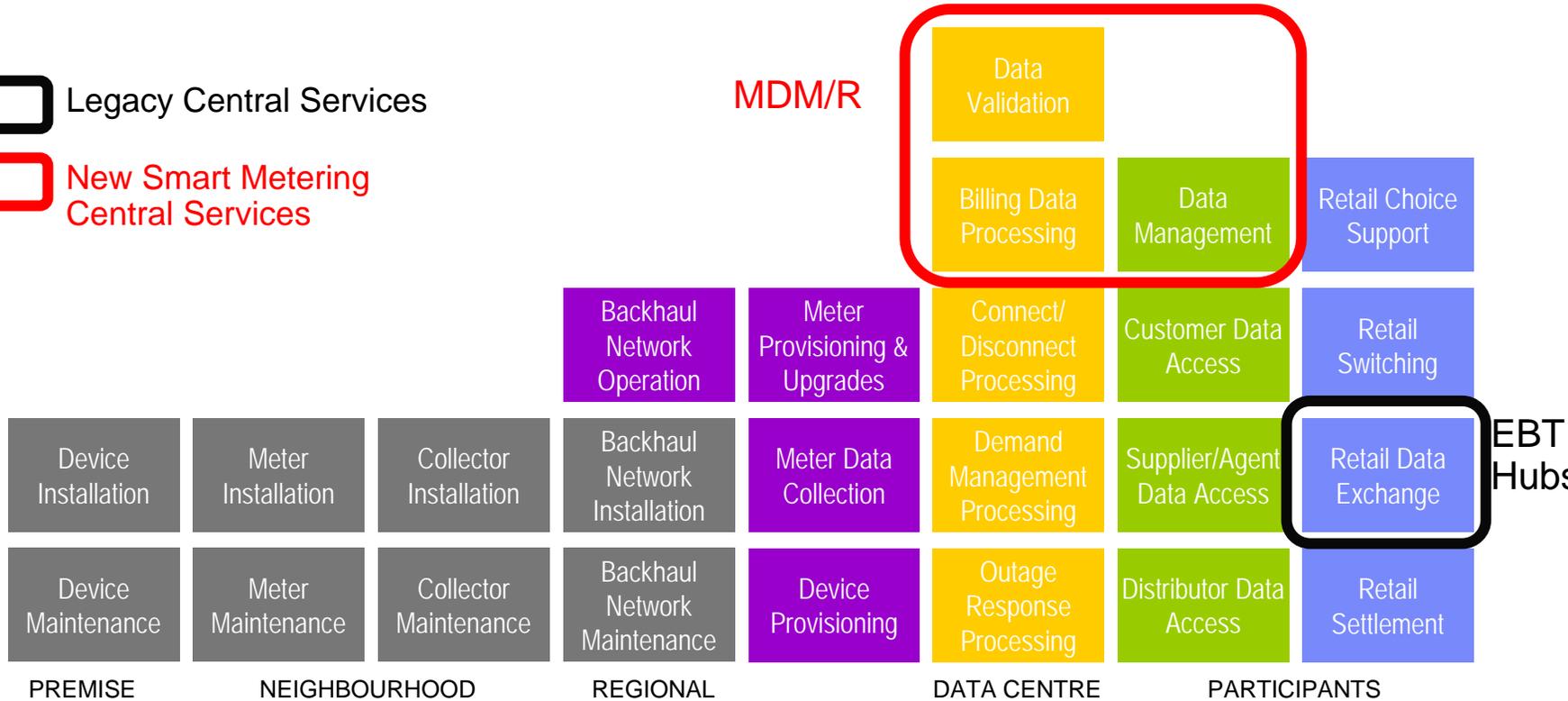
Ontario's MDM/R



Scope of Centralized Services in Ontario, Canada

 Legacy Central Services

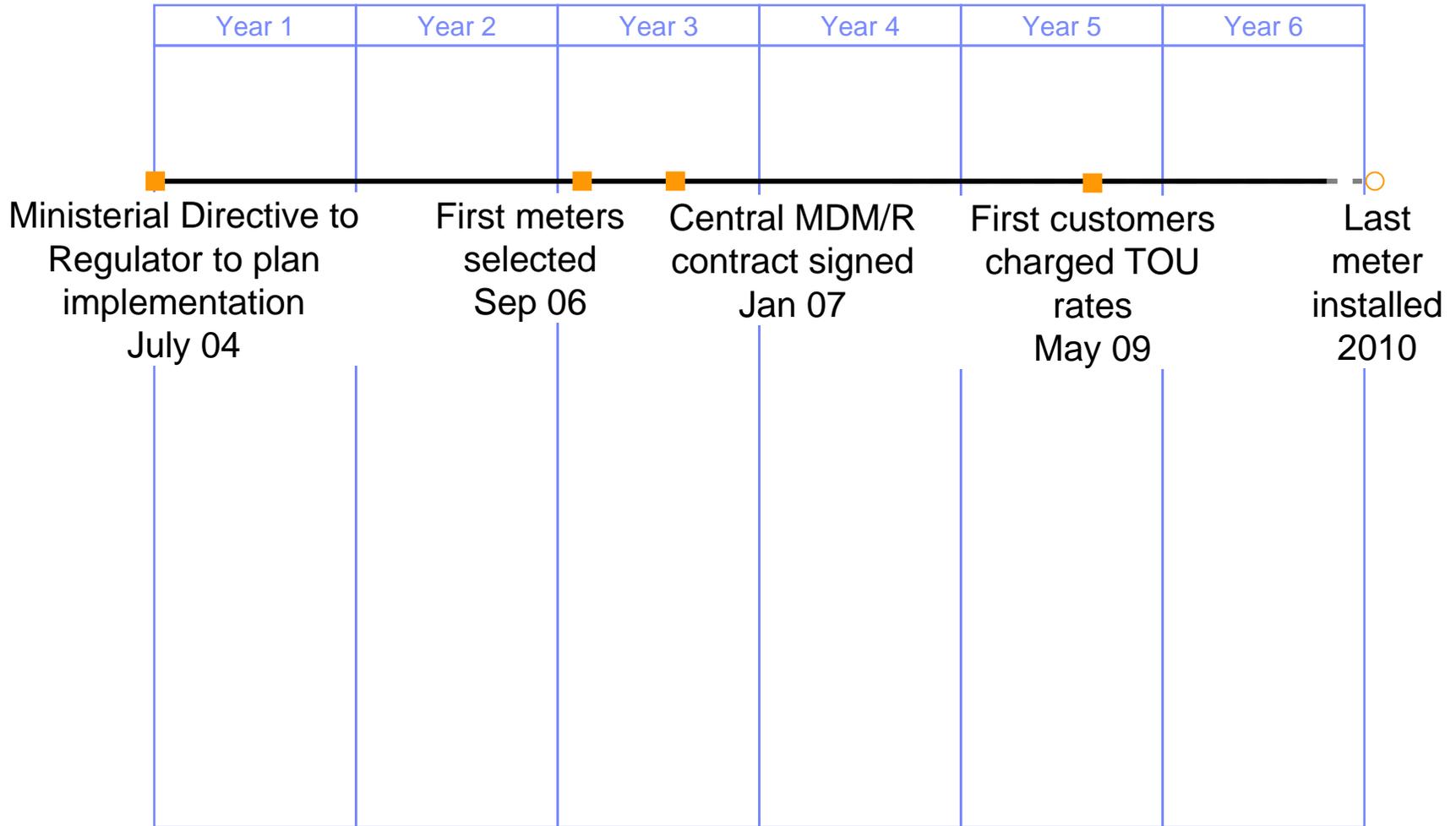
 New Smart Metering Central Services



Ontario's Meter Data Management & Repository

- A central “Smart Metering Entity” for the province
- Assemble, validate and calculate TOU billing determinants
- Hourly interval data from 4.5 million meters
 - 108 million meter intervals a day
 - 85 billion records
- Service over 90 distributors, plus retailers and energy service providers
- Across multiple AMI technologies:
 - Sensus, Elster, Trilliant, Tantalus to start
- Over a dozen CIS products

Ontario Smart Metering Timelines



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Texas

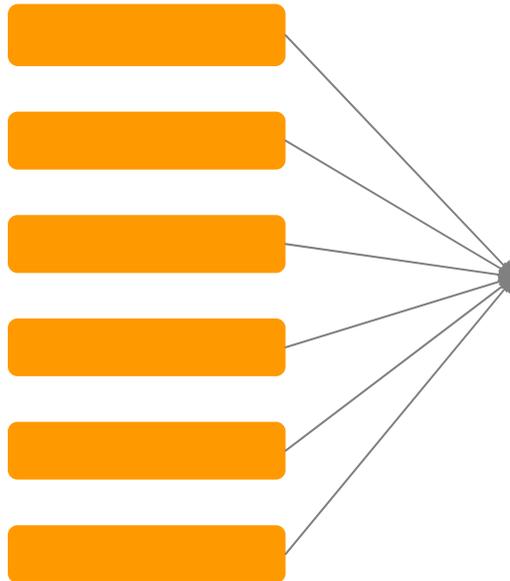


Quick Facts:

- 7.1 million electric customers
- Electric smart metering only
- 4 major distribution companies

Smart Meter Texas

Electricity Distributions
Companies (TDSPs) (4)

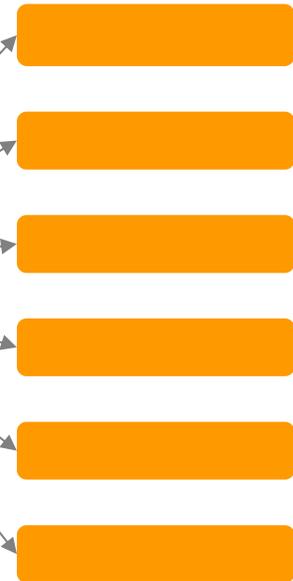


Joint TDSPs

MDM/R

ERCOT

Competitive
Energy Retailers

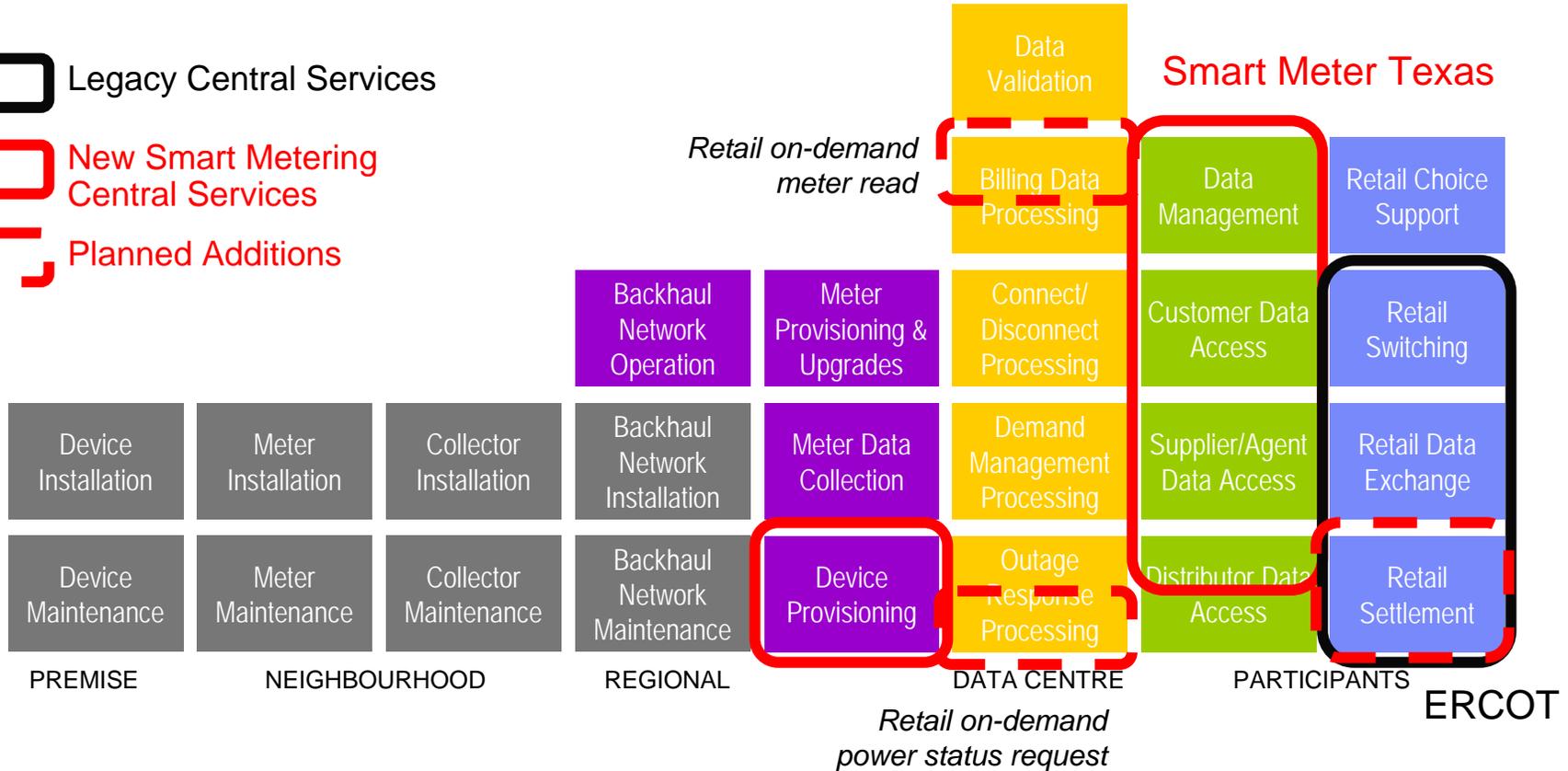


Scope of Centralized Services in Texas, USA

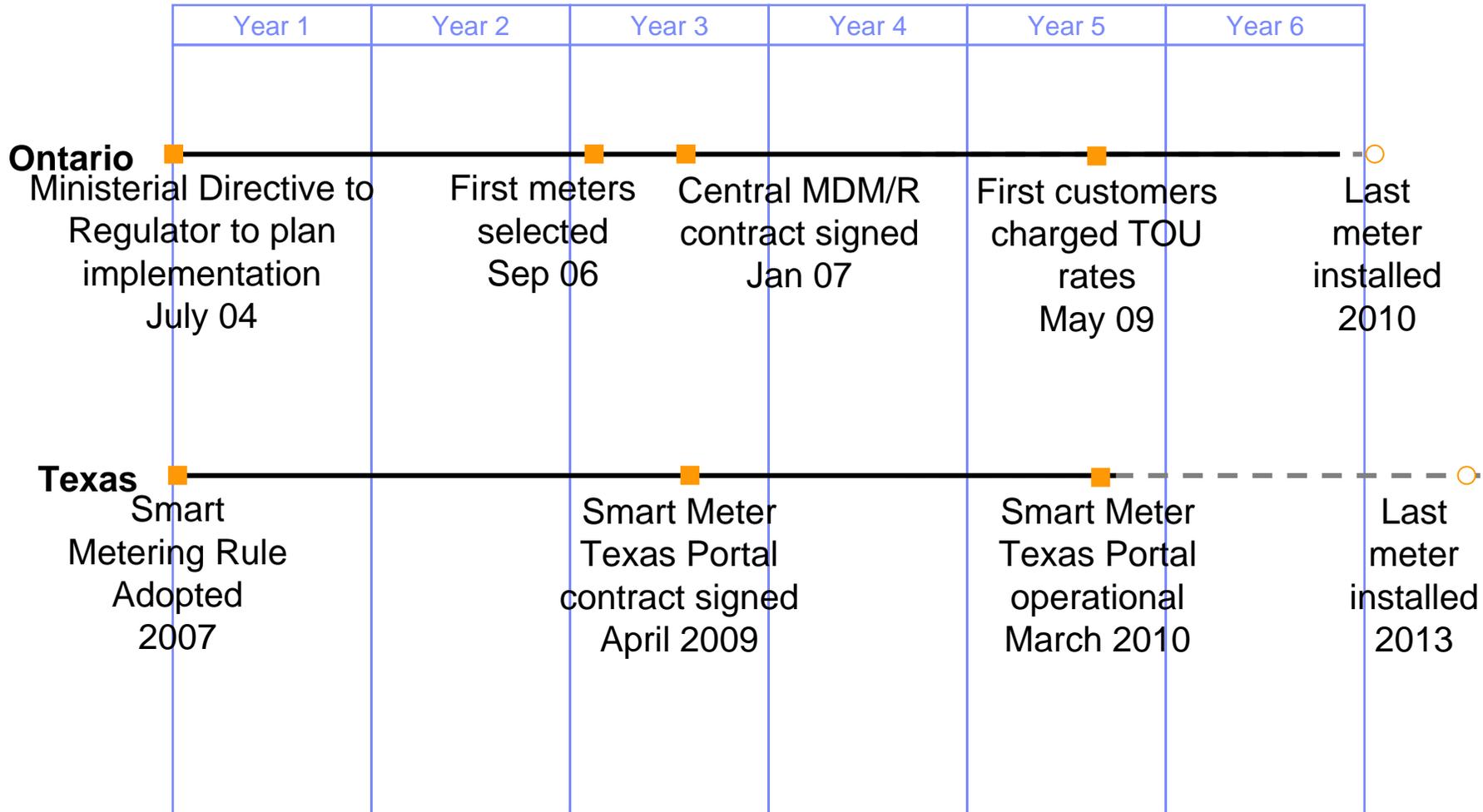
 Legacy Central Services

 New Smart Metering Central Services

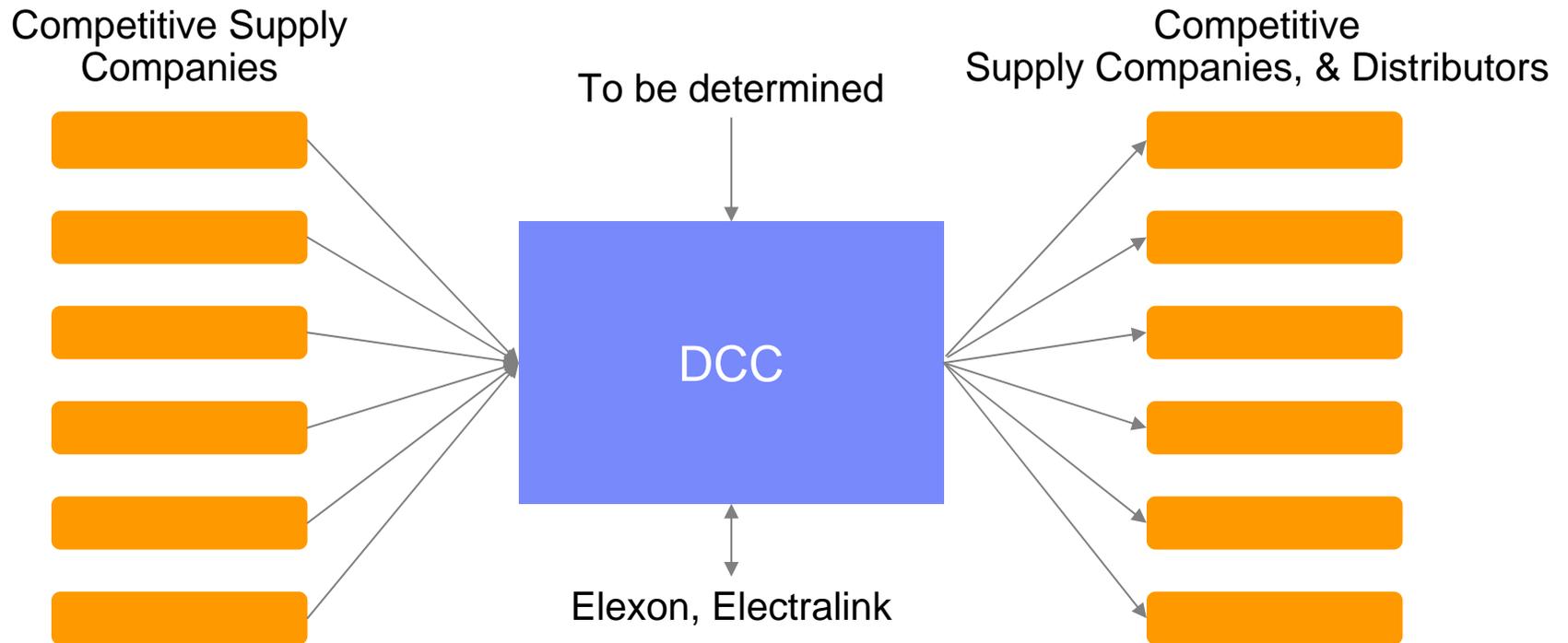
 Planned Additions

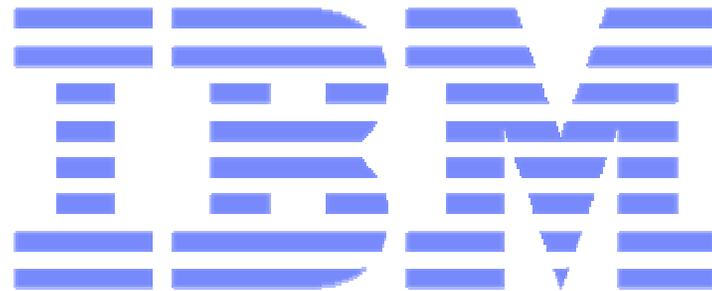


Comparative Smart Metering Project Timelines



Plans for the United Kingdom





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