

DTE Energy®



SmartCurrentssm : Technical Achievements and Practical Challenges



We transform energy into information to revolutionize the customer experience

July 28, 2010

v2



The DTE Energy Organization

DTE Energy

Electric Utility

Detroit Edison

Gas Utility

MichCon

**Non-utility
Operations**

**Power & Industrial
Projects**

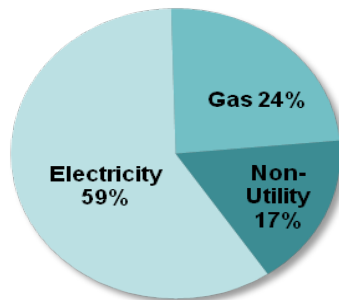
Gas Midstream

**Unconventional
Gas Production**

Energy Trading

Corporate & Other

2009 Operating Revenues*



Key Facts

- Gas and electric utility services to 2.7 million Michigan homes and businesses
- Energy-related services to businesses and industries nationwide
- Assets \$24.2 Billion
- Revenue \$8 Billion
- Employees 10,244

* Excludes Corp. & Other

Detroit Edison



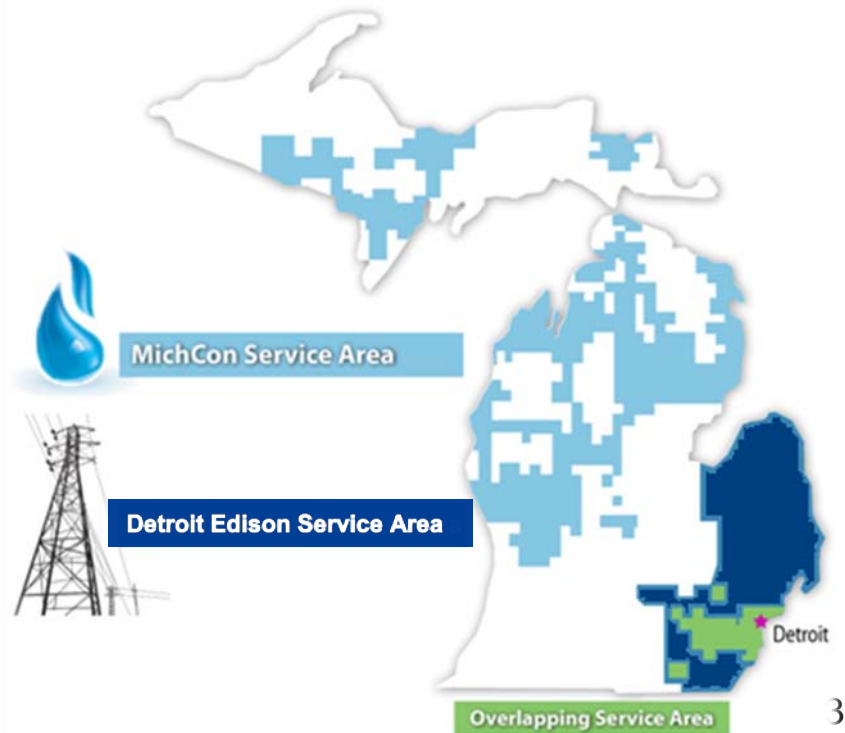
- Largest electric utility in Michigan and one of the largest in country
- **Generation**
 - 11,084 MW electricity
 - 9 fossil-fuel plants
 - 1 nuclear power plant
- **Distribution**
 - 2.1 million customers

MichCon



- Purchases, stores and distributes natural gas throughout Michigan
- 1.2 million customers

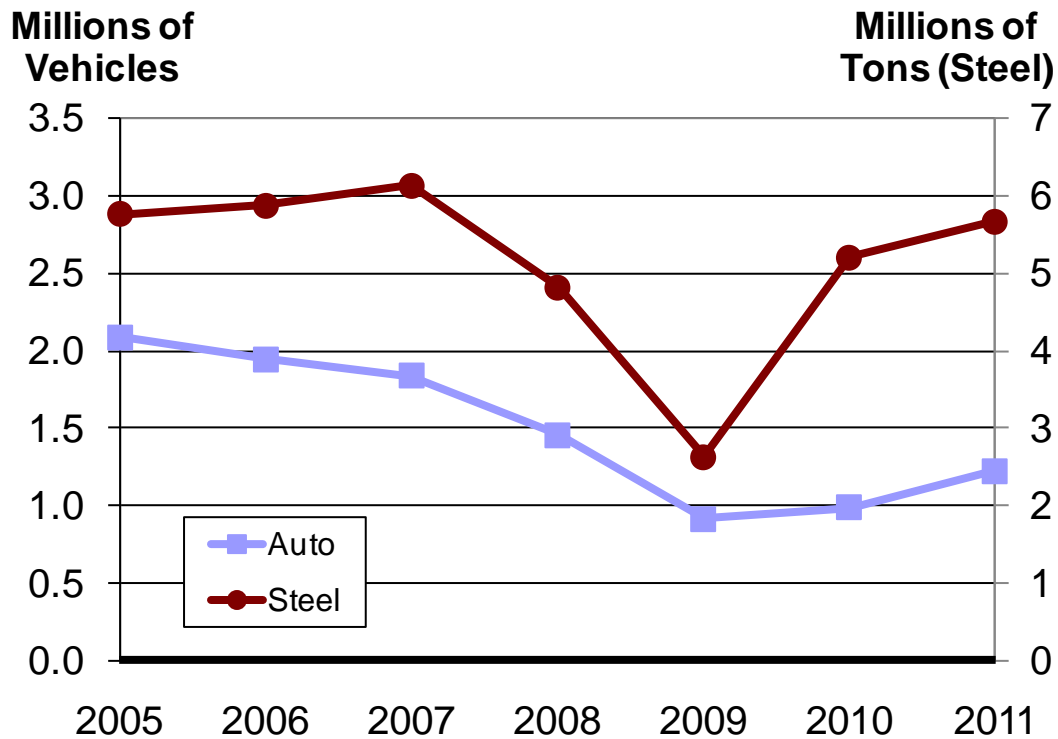
Detroit Edison and MichCon Service Area



Locally, auto and steel production has experienced significant reductions in the past few years



Auto and Steel Production



- After a dramatic decrease in the recent past, auto production is rising driven by sales growth
- Steel tonnage is also up significantly from last year, feeding the growing auto production
- Auto industry bailout saves southeast Michigan; though long-term recovery is still uncertain

Going forward, a number of issues could negatively impact customer affordability



Capital Investments in excess of depreciation

- Mandated investments in environmental control technologies
- Base capital investments to upgrade infrastructure to maintain / improve system reliability

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- Increasing coal transportation costs
- Increasing commodity prices
- Increasing benefits costs
- Inflation pressure

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- Potential challenge to the Comprehensive Energy package especially on Choice cap

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- Climate Change Legislations
- MACT (Maximum Achievable Control Technology) for mercury
- Clean Air Interstate Rule (CAIR)
- Coal Combustion Byproduct (CCB)

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Aging Fossil Fleet / Unit Retirement

- Average age for our fleet is 46 years, with a number of units approaching their end of useful life
- Unit abandonment strategy and future capacity additions will impact customer affordability

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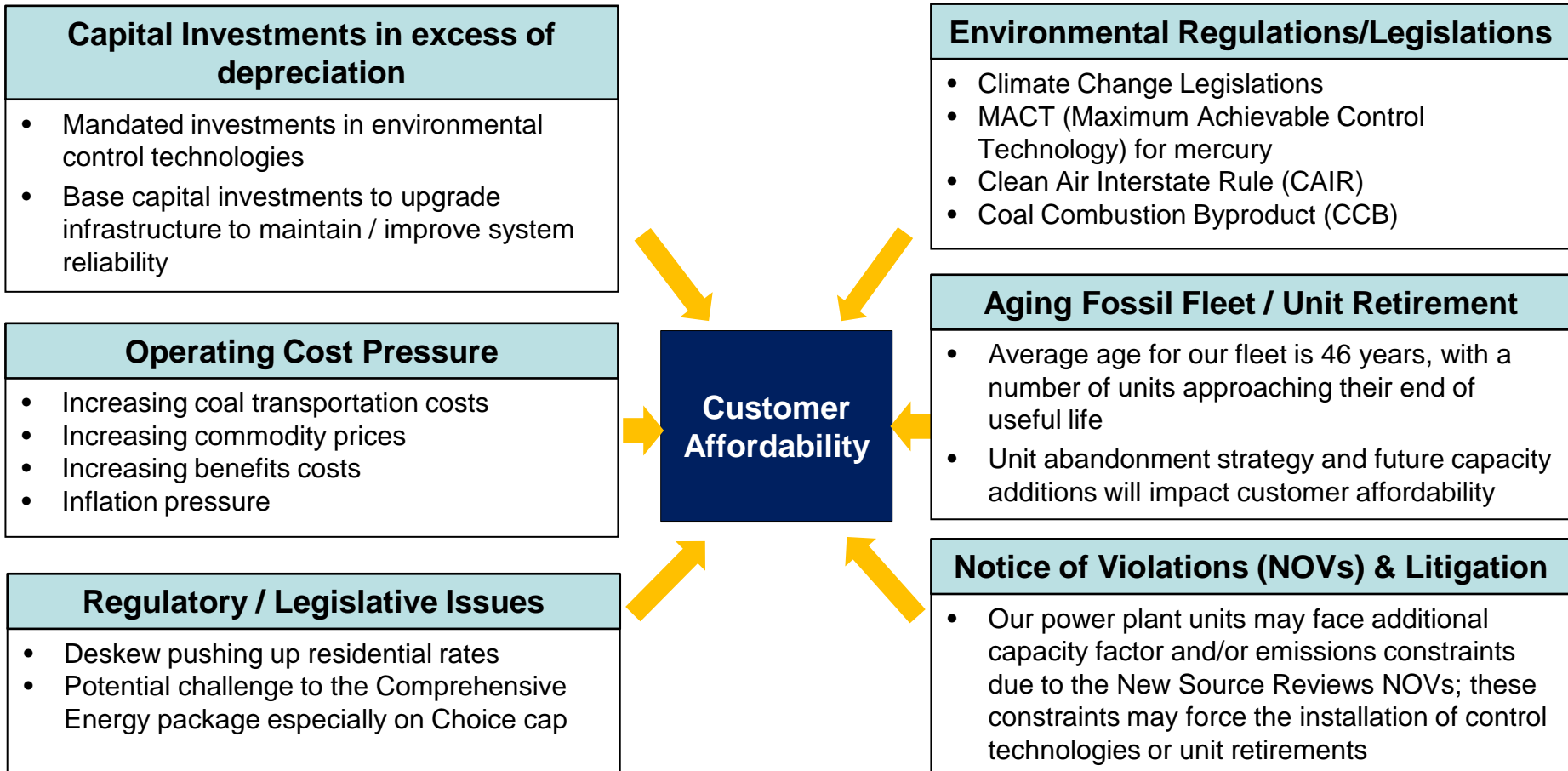
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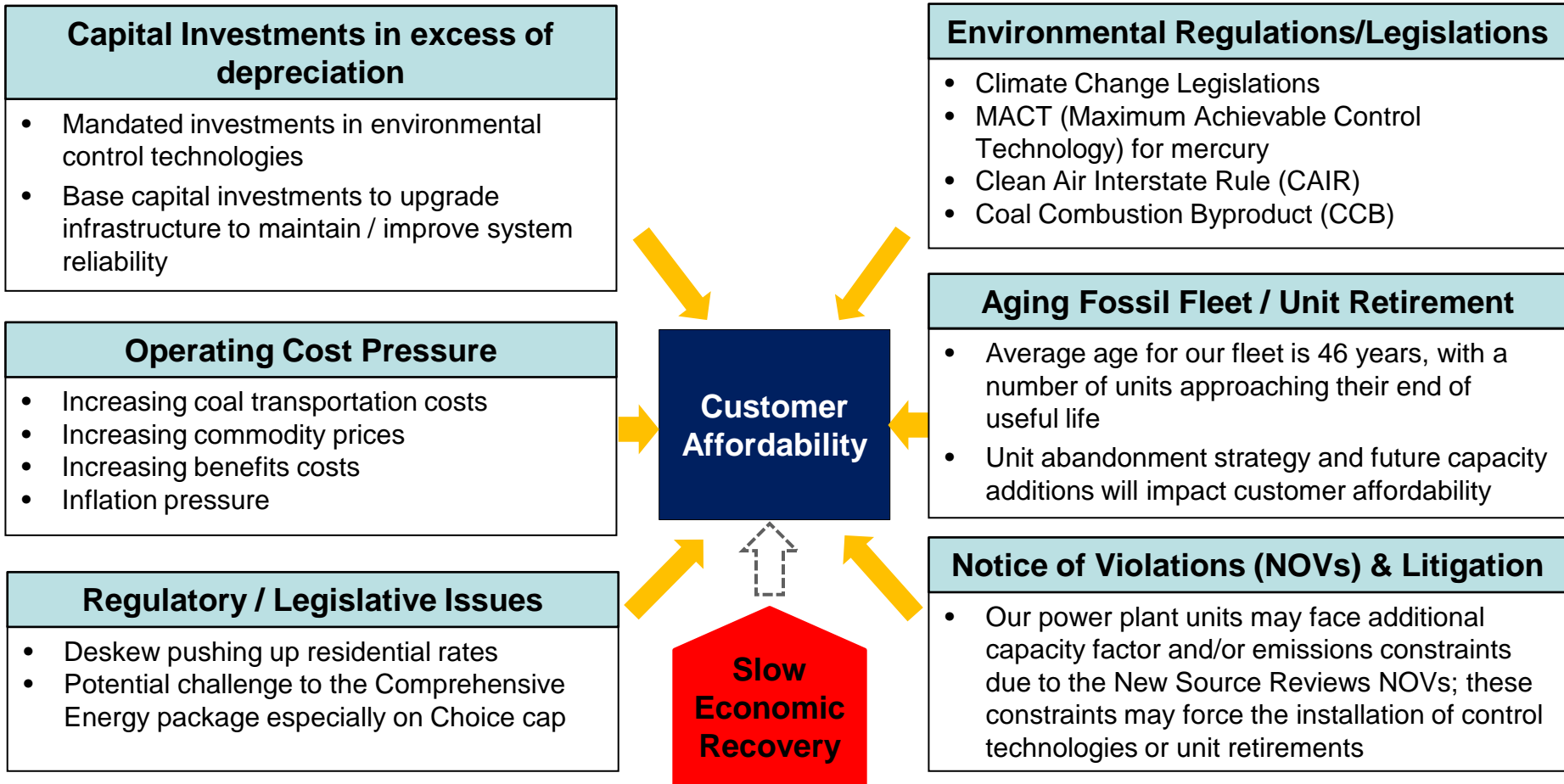
Notice of Violations (NOVs) & Litigation

- Our power plant units may face additional capacity factor and/or emissions constraints due to the New Source Reviews NOVs; these constraints may force the installation of control technologies or unit retirements

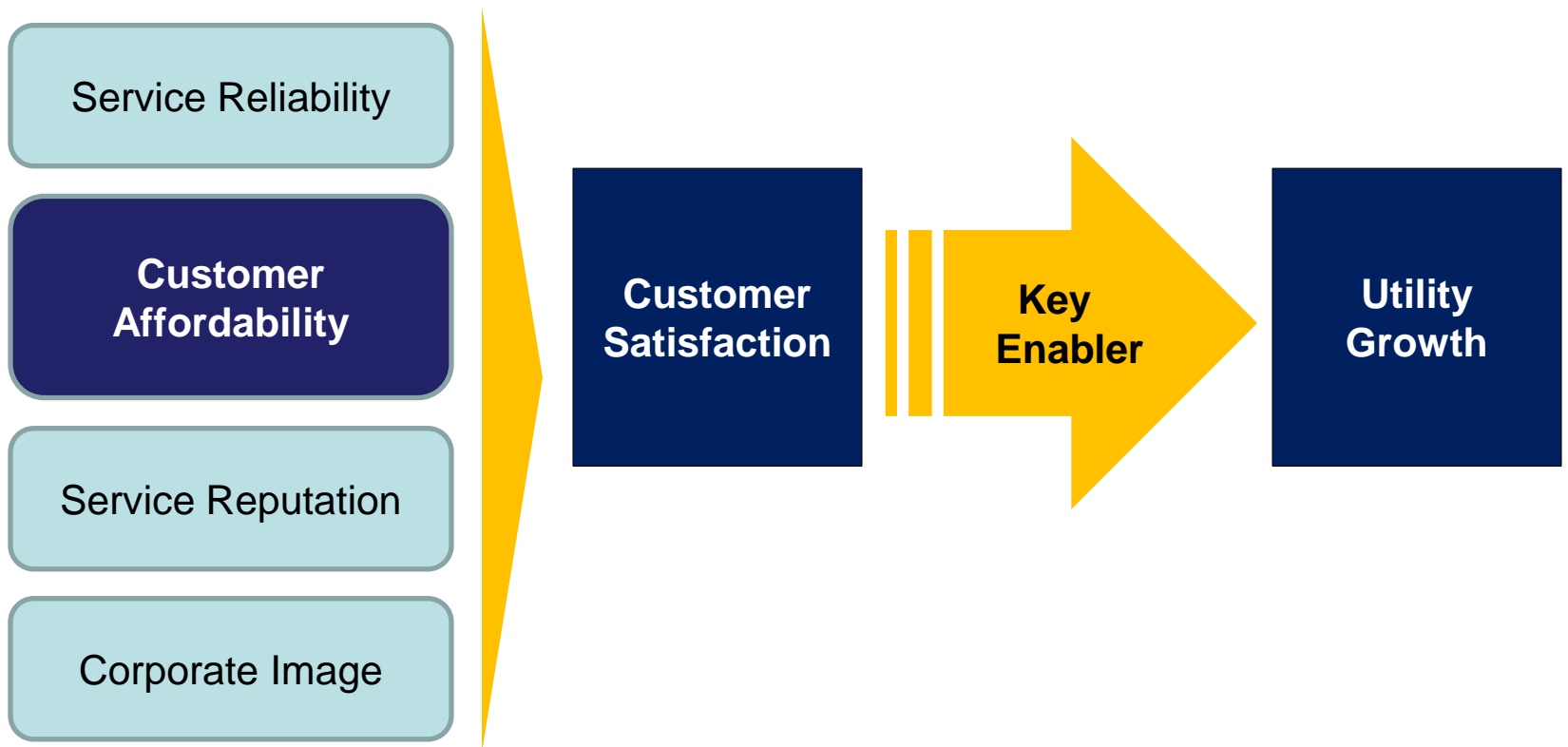
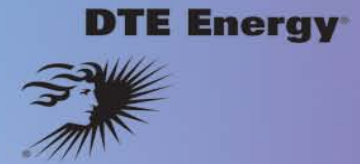
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Customer Affordability has become a significant driver of customer satisfaction



Addressing Customer Affordability involves a broader solution set that includes leveraging technology investments



Intense focus on Customer Satisfaction



- Proactively seeking and providing assistance to customers who are struggling to pay utility bills
- Developing and implementing targeted initiatives to improve overall customer satisfaction

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Minimizing large, discretionary investments and pacing investments as much as possible



- Making mandated investments in our highest value-generating assets
- Strict capital discipline to mitigate affordability pressure

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Investing in technologies to balance customer affordability and customer satisfaction



- Advanced Metering Infrastructure (AMI)
- Smart Grid Technologies
- Demand side management
- Energy Optimization

We closely monitor Smart Grid Issues and develop corresponding mitigation strategies



Smart Grid Issues

DTE Energy's Risk Mitigation Strategy

Demonstrating the value of the Smart Grid

- Currently developing a robust education and communication plan to ensure our major stakeholders understand the inherent value in Smart Grid technologies
- Will rollout technology slowly to ensure we can address customer issues proactively

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Implementation of NIST Interoperability standards

- Internally we have created a Smart Grid Standards Engagement team with subject matter experts to actively participate in NIST interoperability meetings

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Data Access / Privacy Issues

- Collaborating with other utilities and EEI to develop a position in response to the Department of Energy's Request for Information on this particular issue
- This is a major discussion point within the Michigan Smart Grid Collaborative

Smart Grid = SmartCurrentssm

SmartCurrentssm is DTE's "brand" of Smart Grid, an extension of our existing GreenCurrentssm program.

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Electric Utility

- Austin Energy
- AEP
- Oncor
- Florida Power
- Xcel Energy
- DTE

Smart Grid "Brand"

- Smart Grid 1.0
- gridSMART
- Smart Texas
- Energy Smart Miami
- Smart Grid City
- SmartCurrentssm

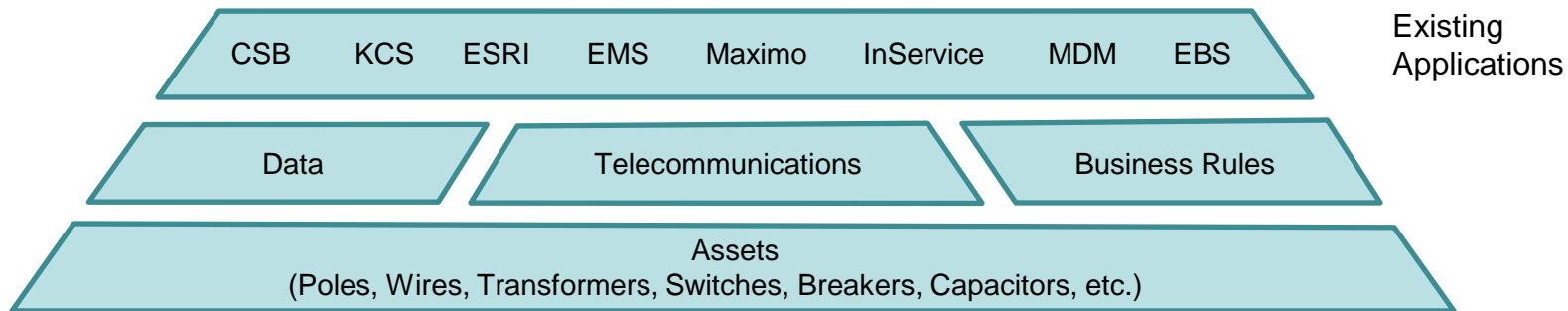


A memorable brand that leverages our *GreenCurrentssm* history and resonates with our customers

SmartCurrentssm Framework

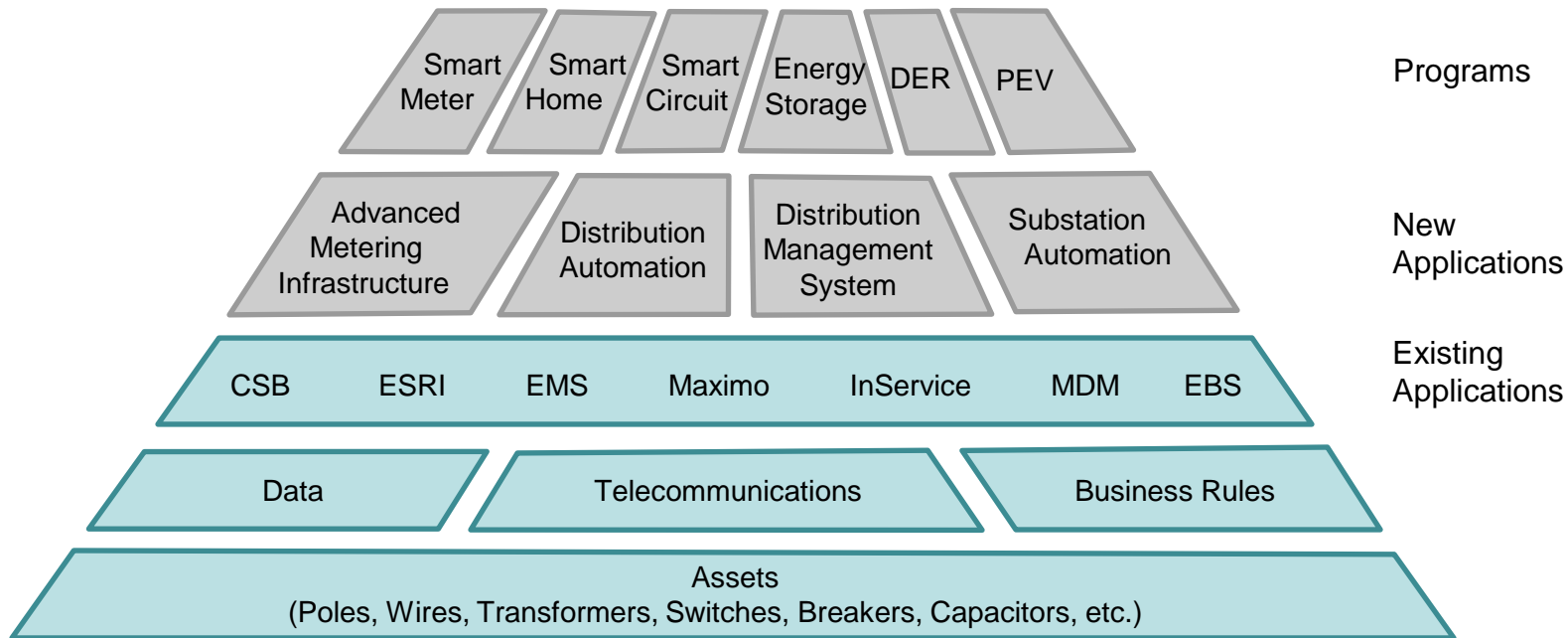
SmartCurrentssm will interface with existing assets, business processes, and computer applications

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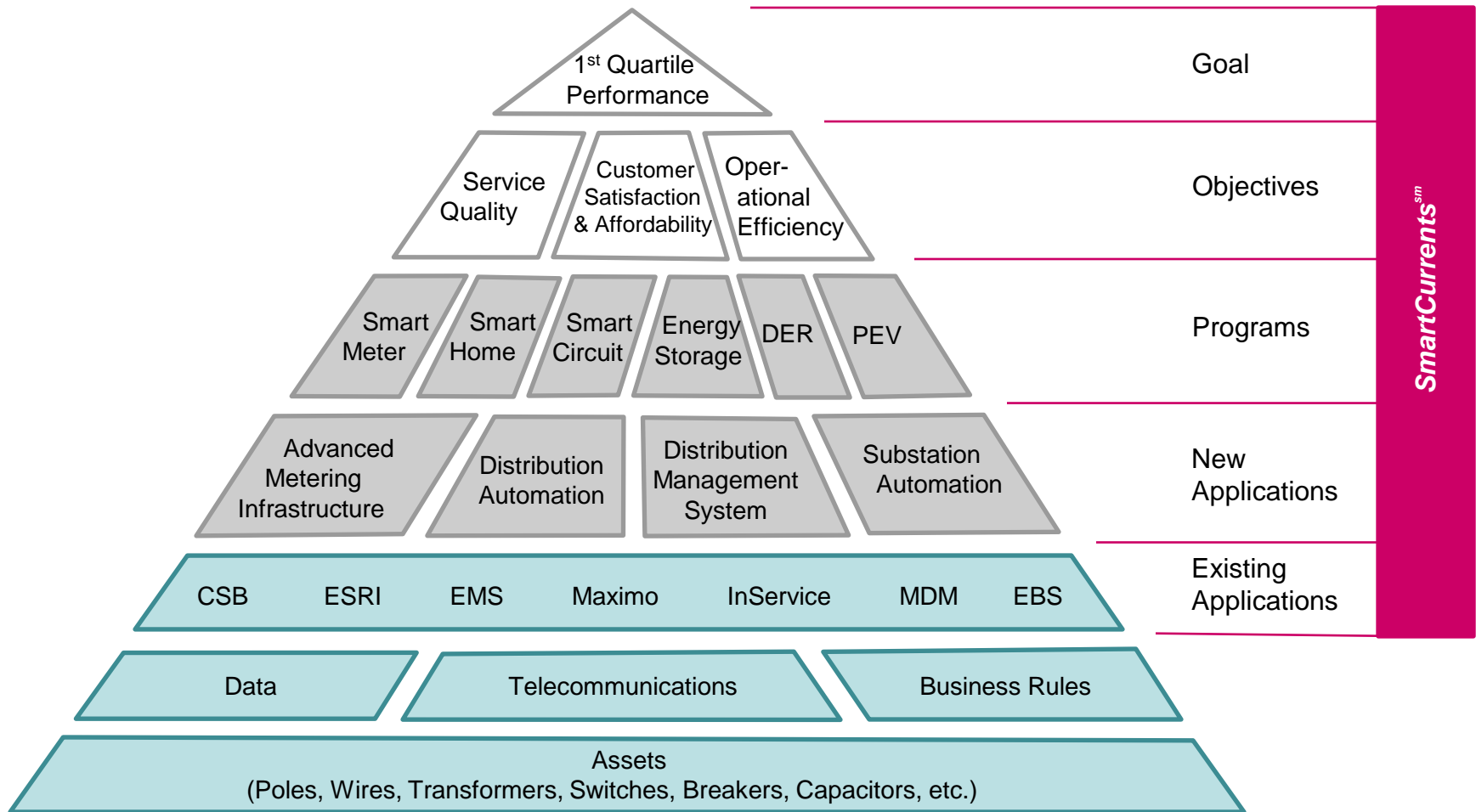
SmartCurrentssm Framework

SmartCurrentssm incorporates new applications and includes several ongoing and proposed programs



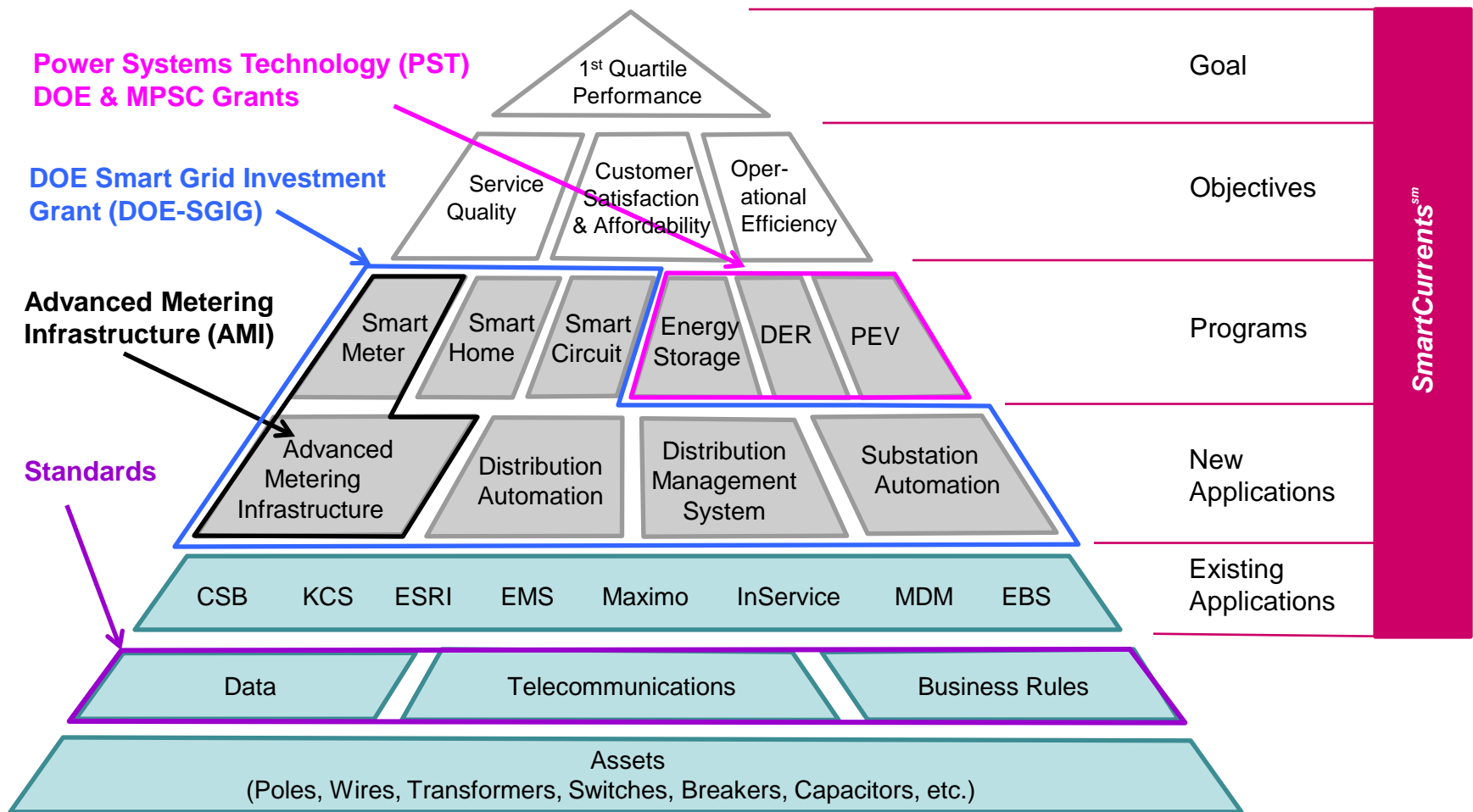
SmartCurrentssm Framework

SmartCurrentssm is focused on corporate objectives and will help deliver first quartile performance



SmartCurrentssm Framework

SmartCurrentssm is a mix of existing and new applications, the programs dependent upon them, and supports operational goals and objectives



Smart Grid Investment Grant (SGIG)

Matching stimulus dollars from the Department of Energy

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DOE Grant FOA-58

- Announced the Funding Opportunity Announcement (DE-FOA-0000058) on June 25, 2009
- SGIG program will provide up to 50% percent cost matching for eligible smart grid projects with a maximum three-year duration
- The DOE set aside ~\$3.4B for SGIG, but only \$2B for applicants with projects in excess of \$20 million



DECo Application

- Submitted a two-year investment plan under the SmartCurrentsSM program
- Under the DOE topic area of *"Integrated and/or Crosscutting Systems"*, which is aimed at adding smart grid functions to multiple portions of the electric system
- Cost: \$168M
 - \$84 million from DECo and partners
 - \$84 million expected from DOE grant



Latest Status

- DTE's contract with the DOE for an \$84 million matching grant was signed and executed April 26, 2010 and will be complete in 2012.

Smart Grid Investment Grant Project Scope

A two year project within the SmartCurrents program

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AMI

- 600,000 meters
- Rollout begins in Oakland County and continues in the surrounding areas, including the city of Detroit
- DECo offers OpenWay AMI solutions from Itron

Smart Home

- Smart appliances to 300 customers
- In-home displays (IHD) to 1,050 customers
- Programmable Thermostats (PCT) to 1,050 customers
- Dynamic pricing to 1,900 customers

Smart Circuit

- 55 circuit upgrades covering 11 substations at 3 distinct sites (Bloomfield, Milford, Commerce Lake)
- Sites will overlap with AMI installations in Oakland County

Information Technology (IT)

- Integrated IT systems to provide a complete and connected picture of the distribution network
- Security and Interoperability

Advanced Metering Infrastructure

Customer satisfaction and enhanced operations.....

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Devices/ Systems

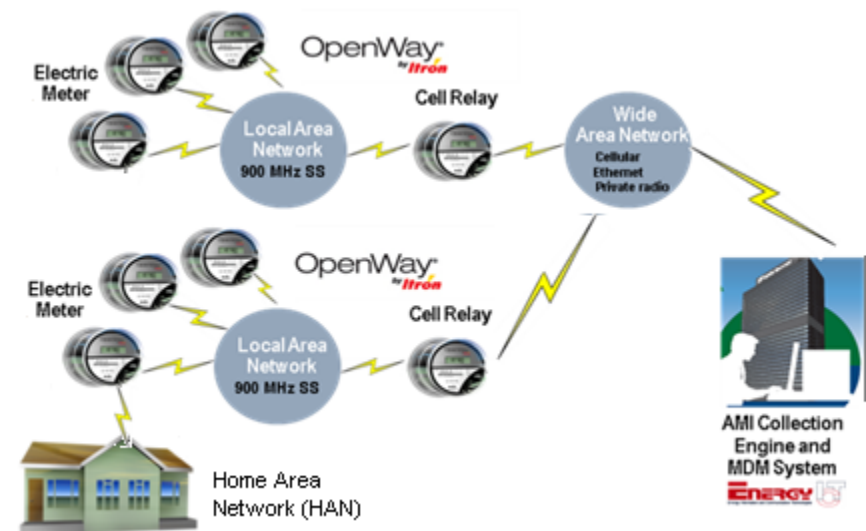
- Meters
- Cell Relays
- AMI Collection Engine and Meter Data Management (MDM) System

Key Features

- Bi-directional communication
- Daily meter reads of registers and hourly intervals
- Power outage and restoration notifications
- Power quality events (voltage fluctuation, momentaries etc.), notification and storage
- Remote disconnect/re-connect
- Net metering
- Advanced tamper detection and alarms

Bi-directional communication through three networks:

- Home Area Network (HAN)
- Local area Network (LAN)
- Wide Area Network (WAN) or Backhaul

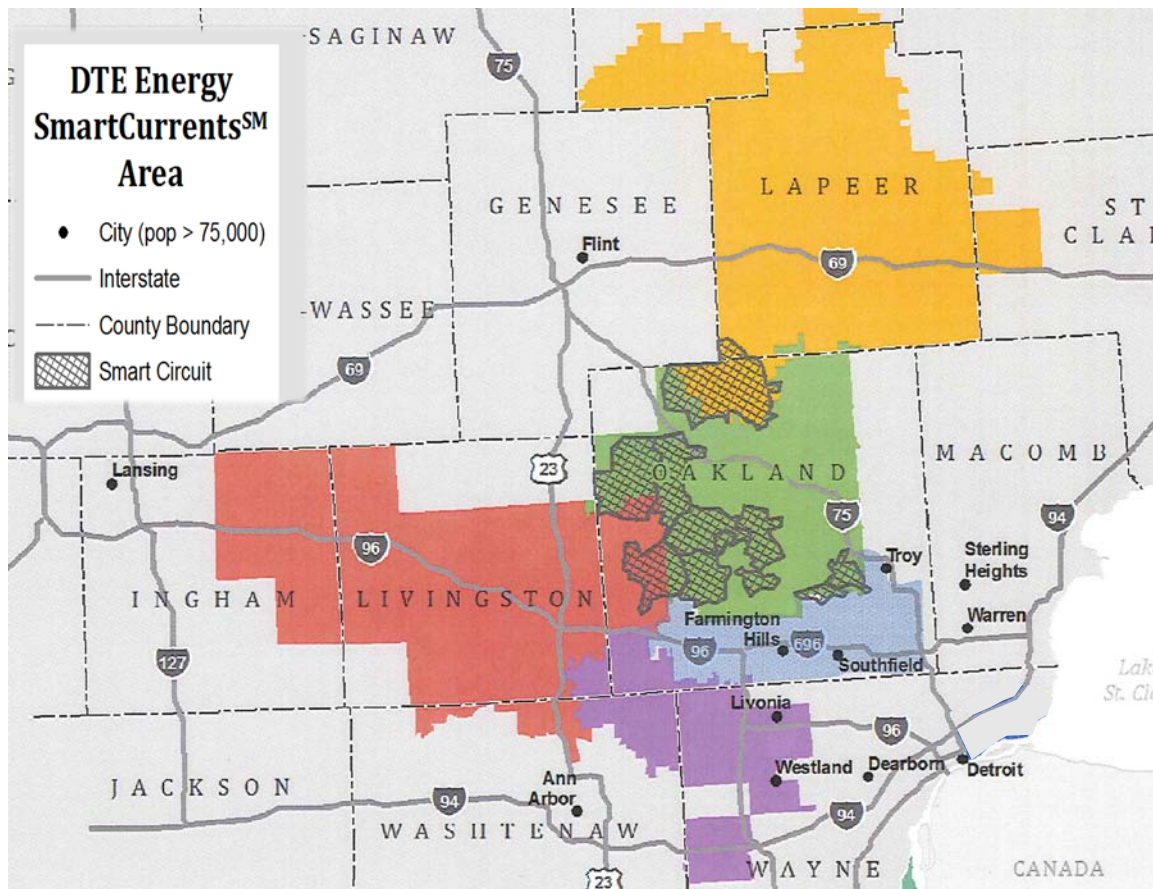


AMI Installation & Smart Circuit Locations

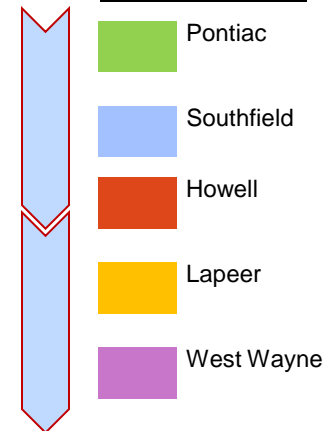
Current installation plans by meter read stations



AMI Deployment Sequence



Meter Read Station

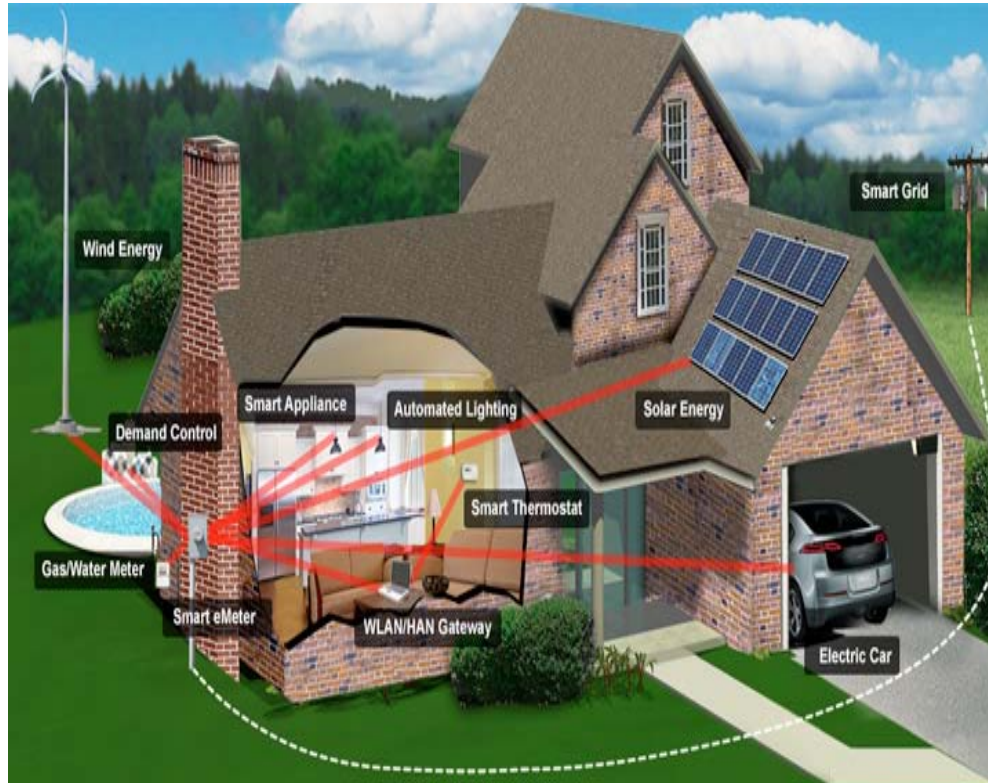


Installation (As of July 1, 2011)

- 350,000 endpoints installed

Smart Home

Systems, Devices, and Functions



Devices/ Systems

- Electric and gas AMI meters
- In-home displays (IHD)
- Programmable thermostats (PCT)
- Smart appliances
- Other utility meters
- Plug-in hybrid electric vehicle (PHEV)
- Local energy sources and storage (e.g., solar, wind etc.)

Key Functions

- Display of energy usage on IHDs
- Energy consumption information and remote thermostat control through Internet
- Dynamic pricing and pre-pay options
- Pre-programming of appliances to respond to dynamic pricing

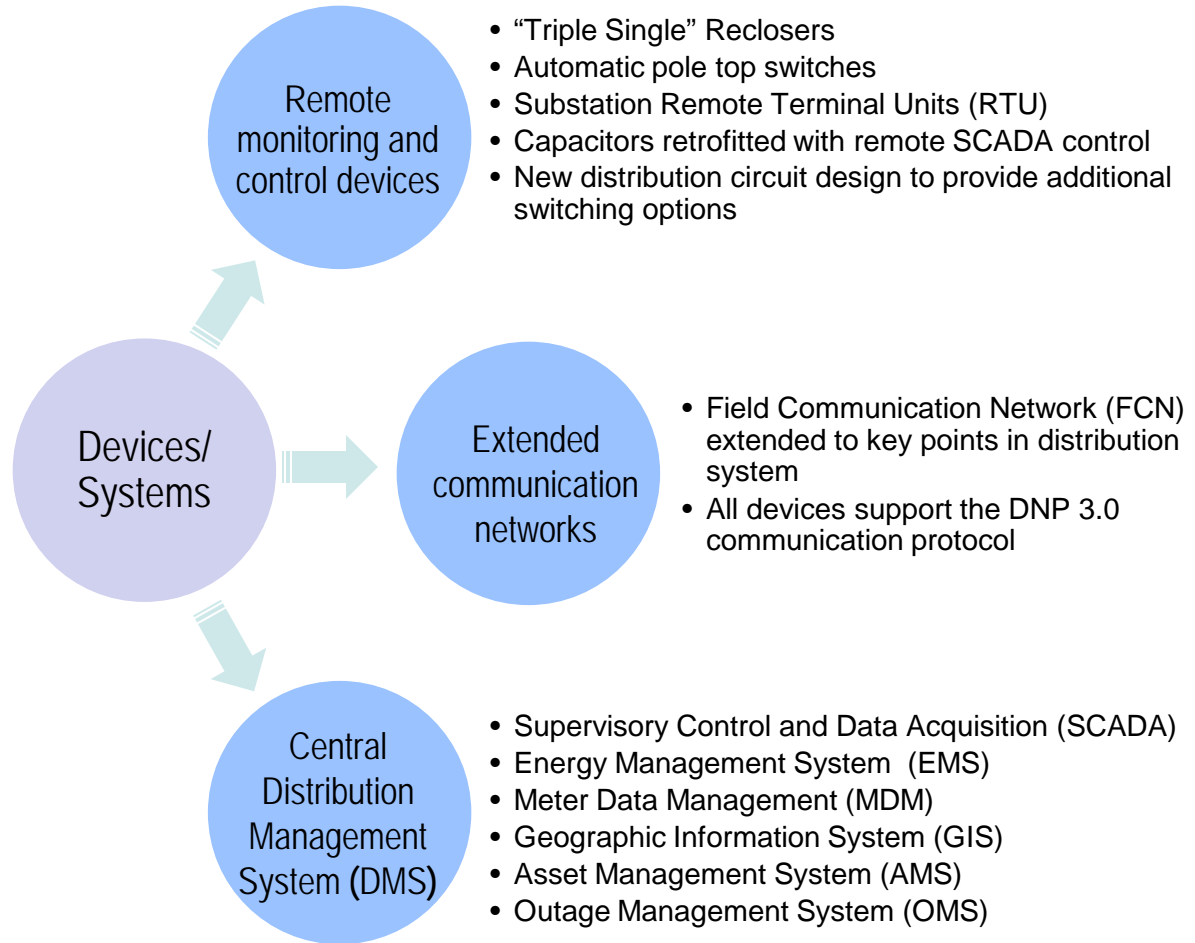
Smart Circuit

Features and Systems



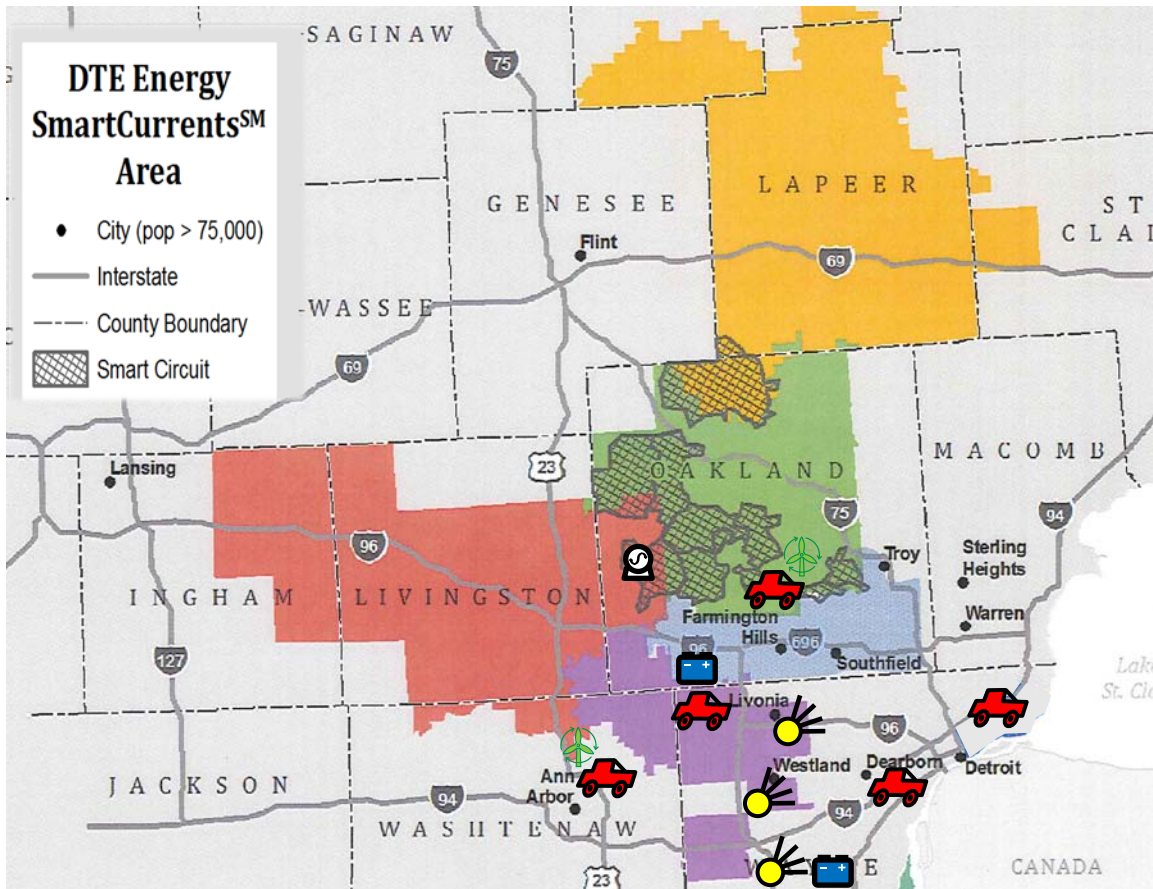
Key Features

- Self-healing
- Intelligent switching and fault diagnosis
- Voltage/VAR control
- A complete and connected picture of the whole system
- System level diagnosis and modeling applications to ensure reliability and efficiency
- Business intelligence to operators and functional organizations

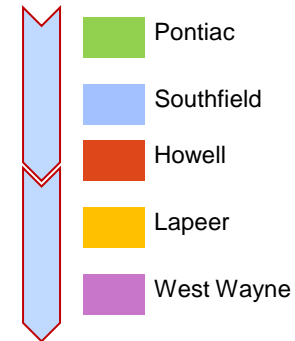


AMI with DOE/MPSC Grant Projects

The SGIG, combined with the balance of DOE & MPSC funded projects, touch all aspects of the Smart Grid and are geographically dispersed



AMI Deployment Sequence



DOE/MPSC Grant Projects

- Wind**
- Solar**
- PEV**
- Energy Storage**
- Adv. Distributed Generation**

SmartCurrentssm = Customer Satisfaction

- Shorter, less frequent outages
- Control of home energy consumption and cost
- Wind Power, Solar Power, and Electric Vehicles

SmartCurrentssm = Green

- Reduced vehicle use for meter reading, fault locating, & repairs
- Integration of renewables
- Increased Electrical System Efficiency

SmartCurrentssm = Jobs & Job Satisfaction

- 700 jobs for IT contractors and Overhead Lineman
- 350 permanent positions for suppliers
- Dispatch direct to trouble locations
- Reduced patrol time, particularly at night or in bad weather
- Better operating maps and mapping products