



SIEMENS

# Connected Vehicle, meet the Smart Grid

Victoria, BC | June 2<sup>nd</sup> 2013

Answers for infrastructure and cities.

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## **2013 Ice Storm - NB**

Unprecedented outages  
100,000 without power  
Some for over 1 week





## **2013 Ice Storm - Ontario**

400,000 without power

Many for 3 days or more

Transit system paralyzed

205 flights cancelled



## *“Toyota Prius powers Thornhill man’s home” – Toronto Star*

The retired engineer had planned for an outage by configuring an outlet on his furnace to be powered from his car’s battery. By rotating between heat and electricity he was able to maintain warmth while also supplying power to his refrigerator and freezer to keep his food supplies fresh.

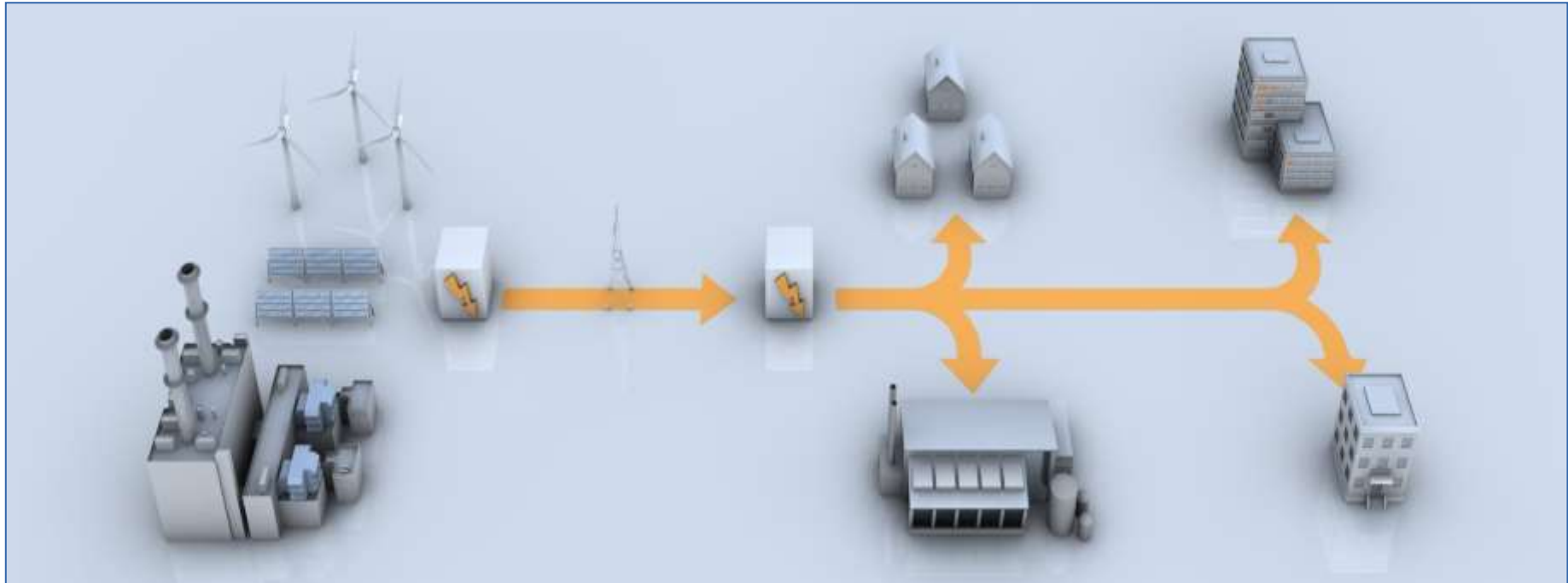


### ***What does this mean to a utility?***



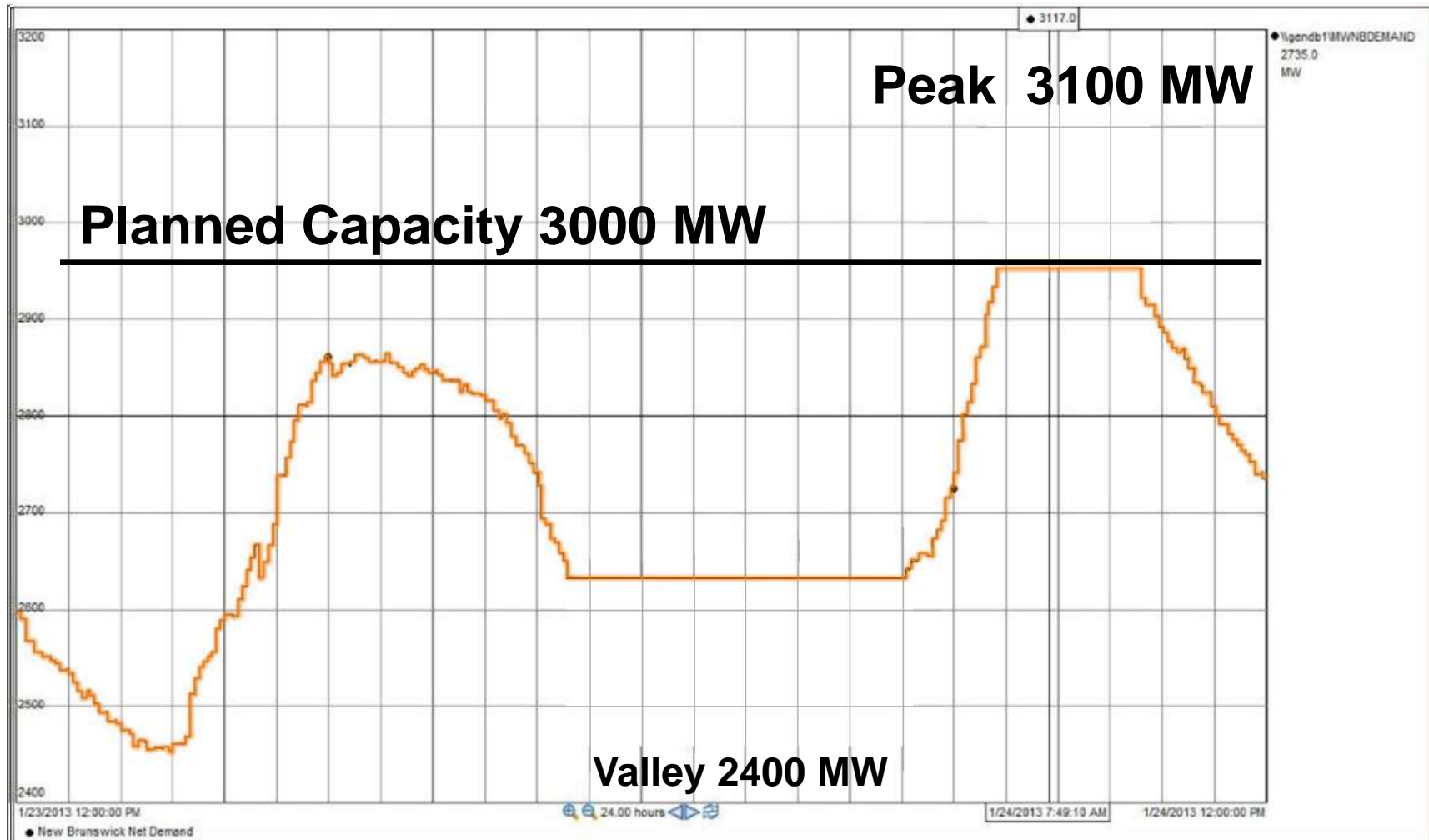
# The Utility Overview

# The Traditional Grid



Large generation units with one way power flow

## Key Driver – Peak Reduction





# EV Considerations from the Utility Perspective



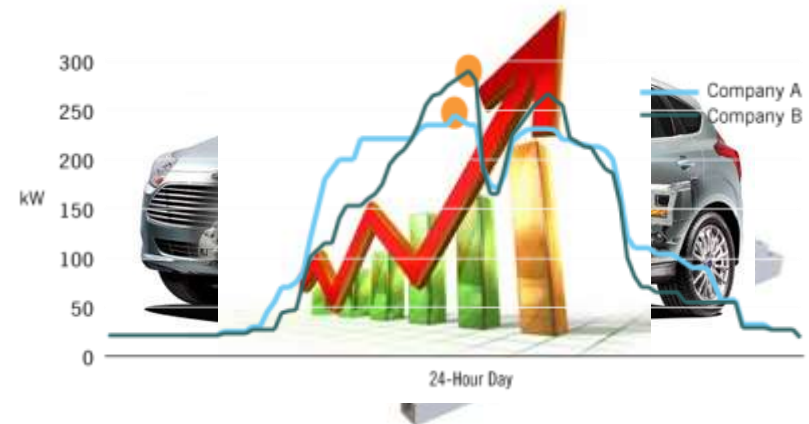
## EV Considerations – Good News

Shiftable load

Constant load

Potential new revenue source

Roaming storage capacity



## EV Considerations – Challenges

Could worsen peak

EV drivers avoid road taxes

Charging infrastructure

Supporting network

Regulated environments



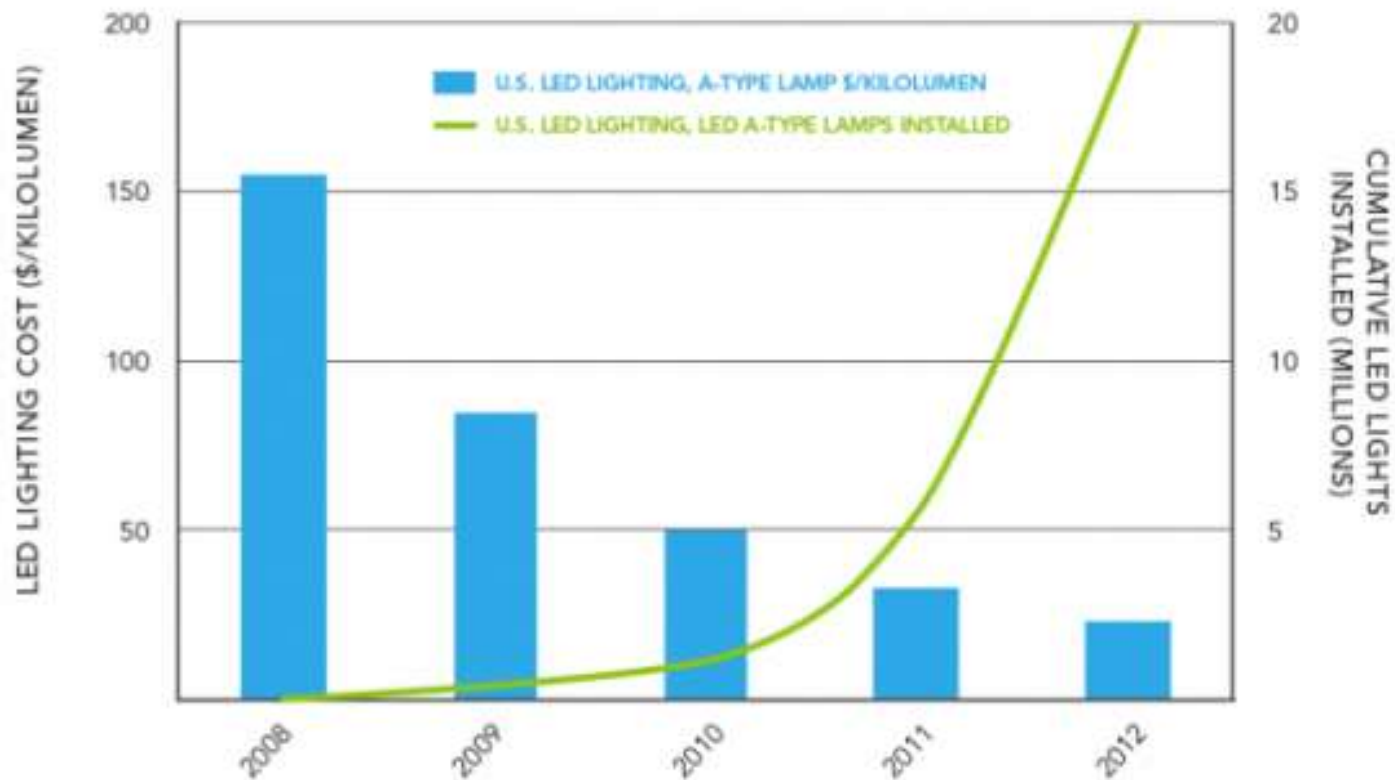


## EV: Trend or Fad?

# Trends: LED Lighting



Deployment and Cost for LED Lights Installed  
2008-2012



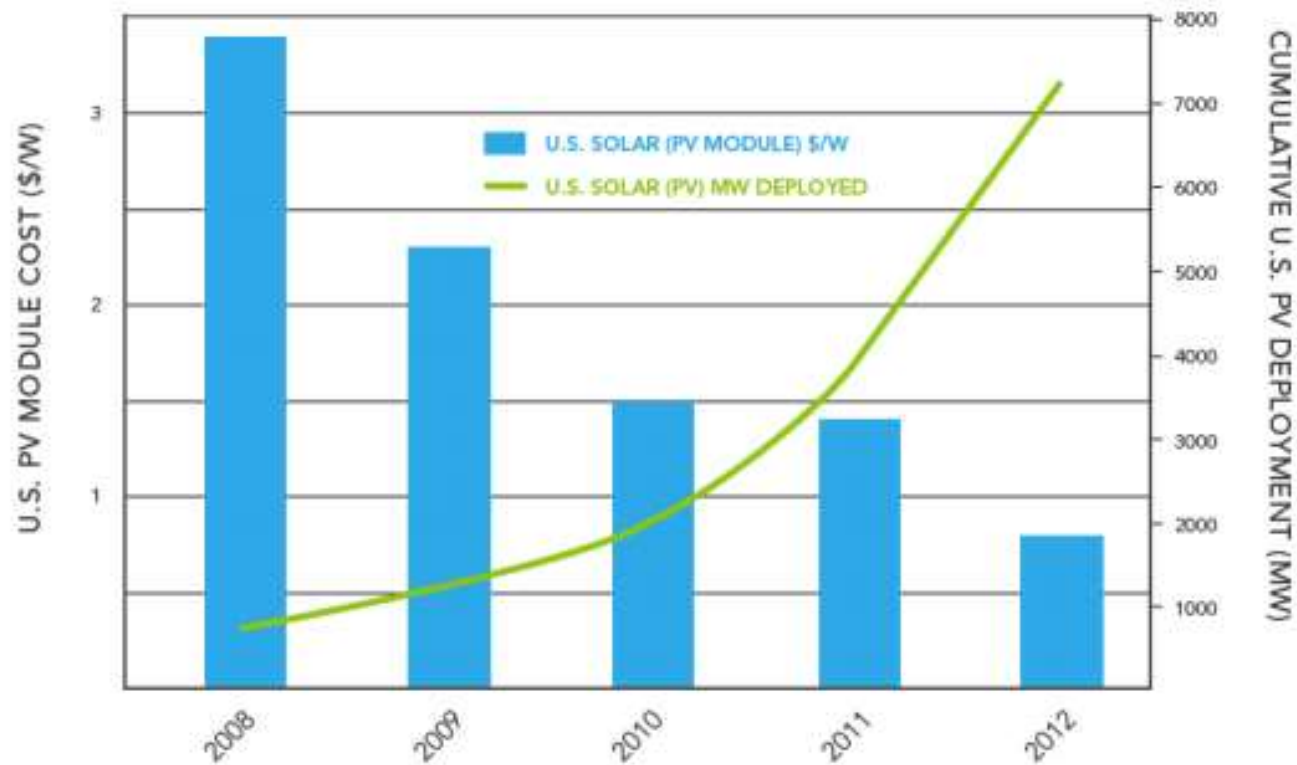
Source: Greentech Media, "Four Charts That Prove the Future of Clean Energy Is Arriving, "We are living it, and it is gaining force." September 18, 2013



# Trends: Solar Energy



U.S. Deployment and Cost for Solar PV Modules  
2008-2012

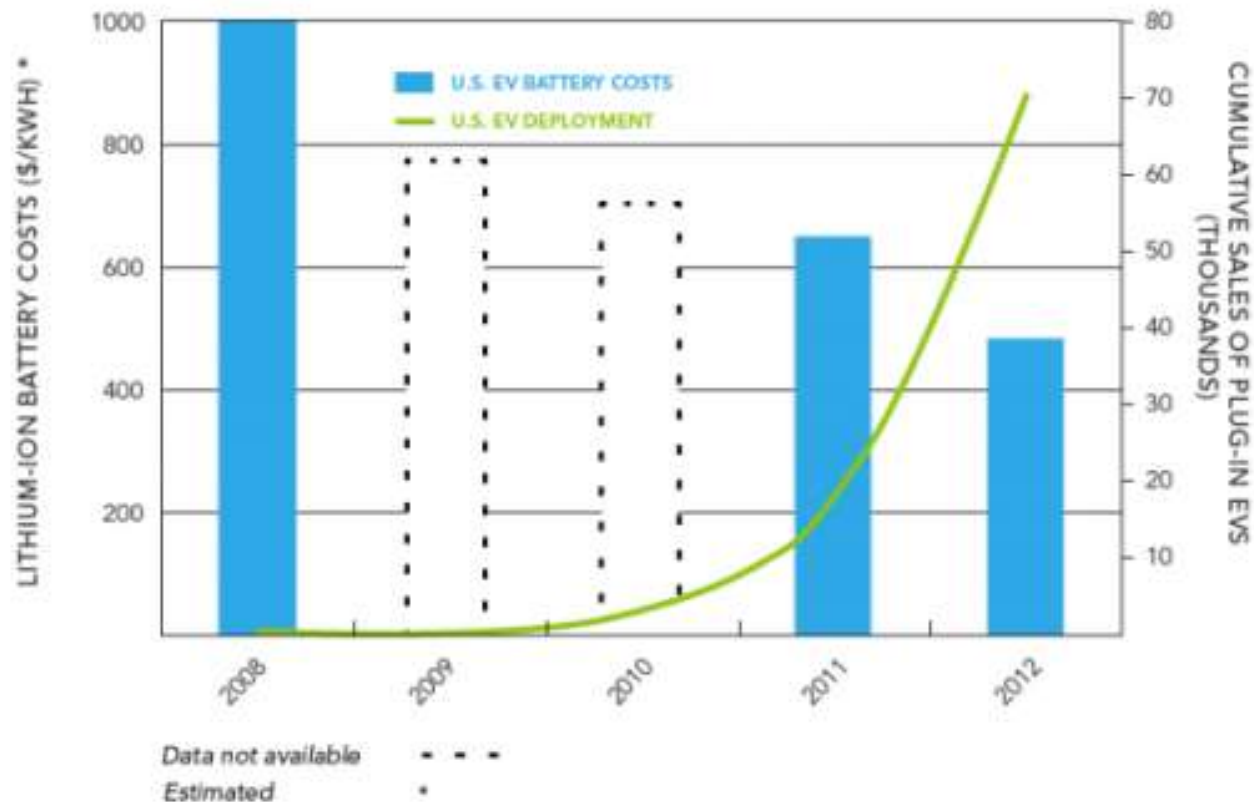


Source: Greentech Media, "Four Charts That Prove the Future of Clean Energy Is Arriving, "We are living it, and it is gaining force." September 18, 2013

# Trends: Electric Vehicles



Deployment and Cost for Electric Vehicles and Batteries\*  
2008-2012



Source: Greentech Media, "Four Charts That Prove the Future of Clean Energy Is Arriving, "We are living it, and it is gaining force." September 18, 2013



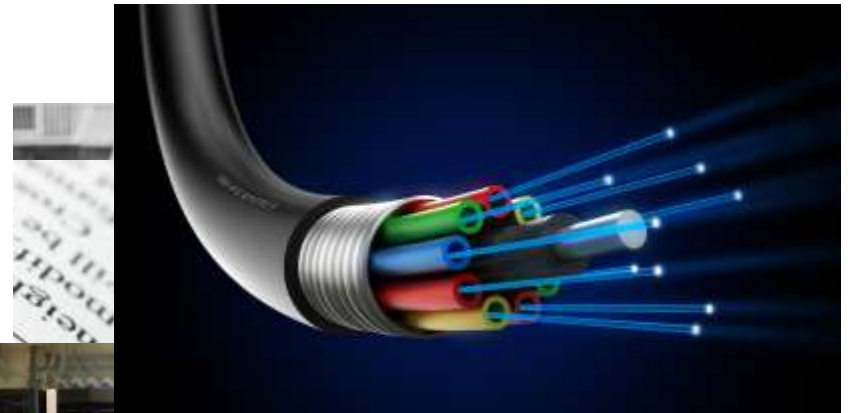
# Utility-Transportation Integration: The Enabler

Drivers

Charging Infrastructure

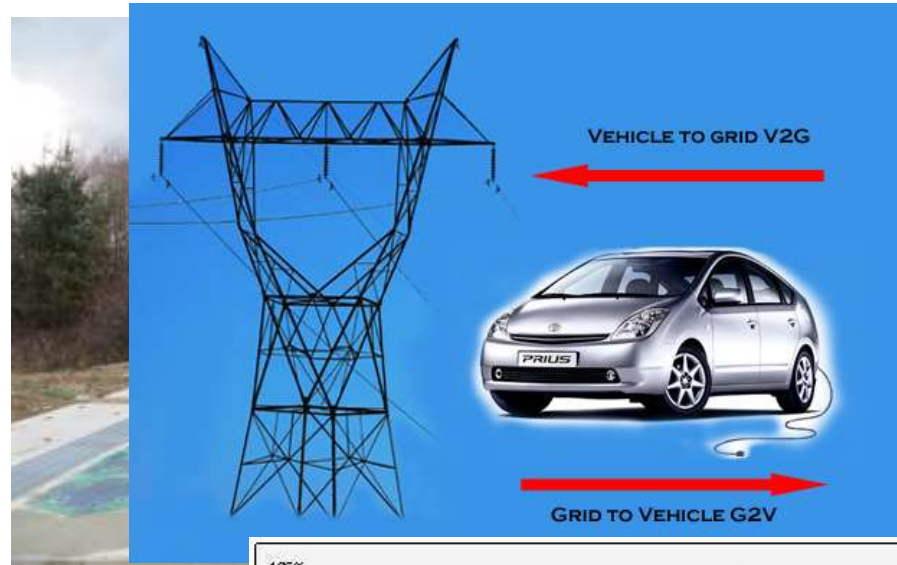
Supporting Systems

Policy

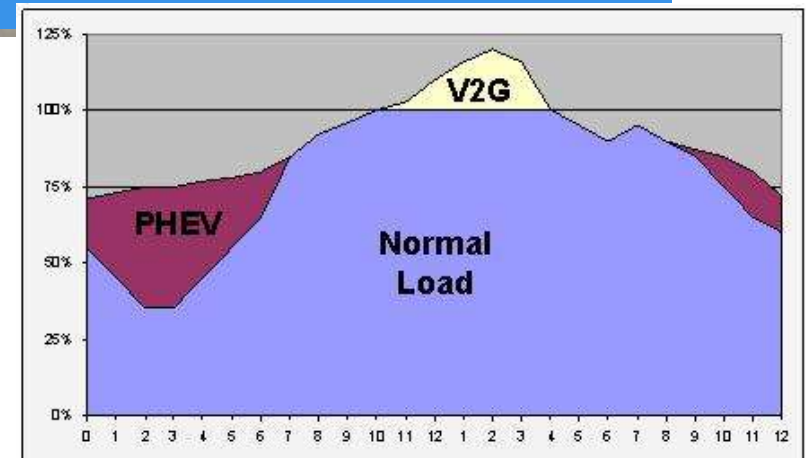


# Utility-Transportation Integration: The Future

**Near Term**



**Long Term**

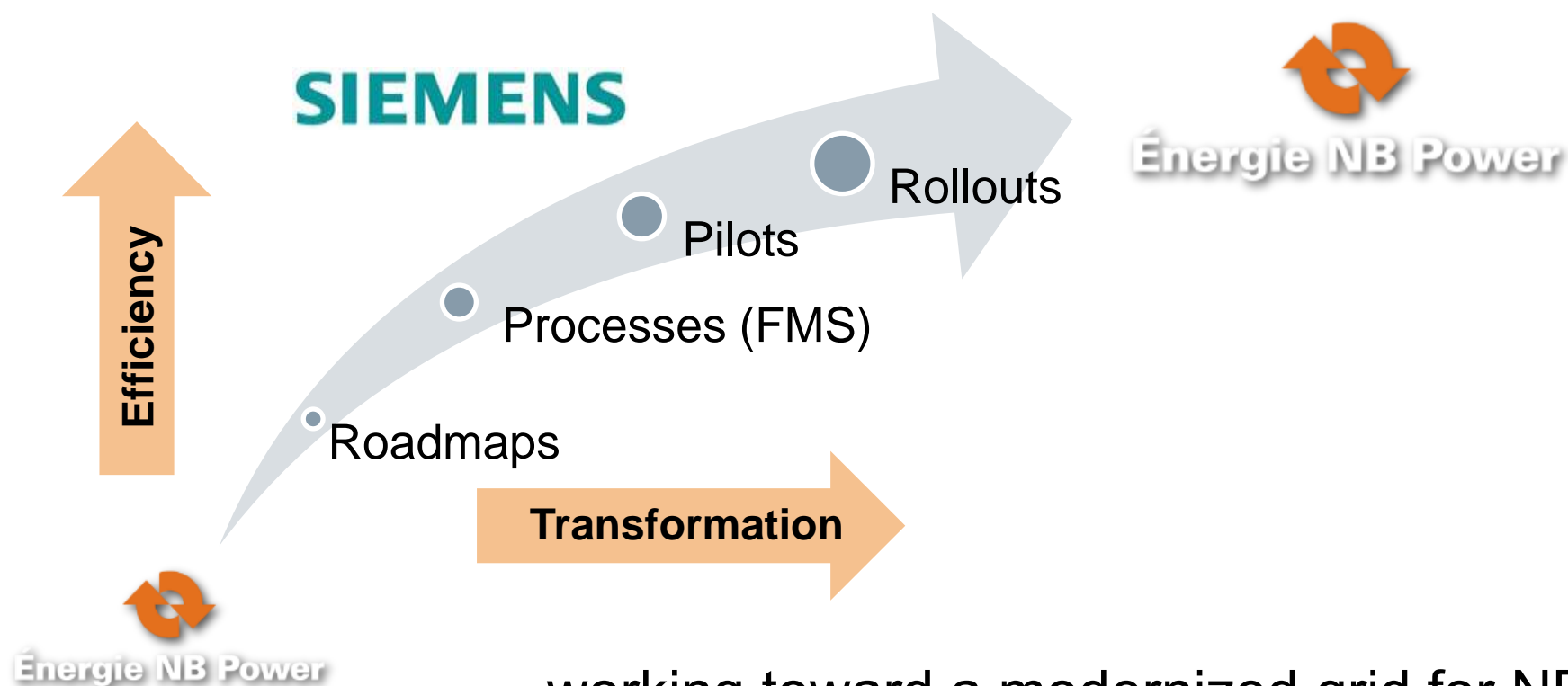




## **NB Power – A Utility of the Future**

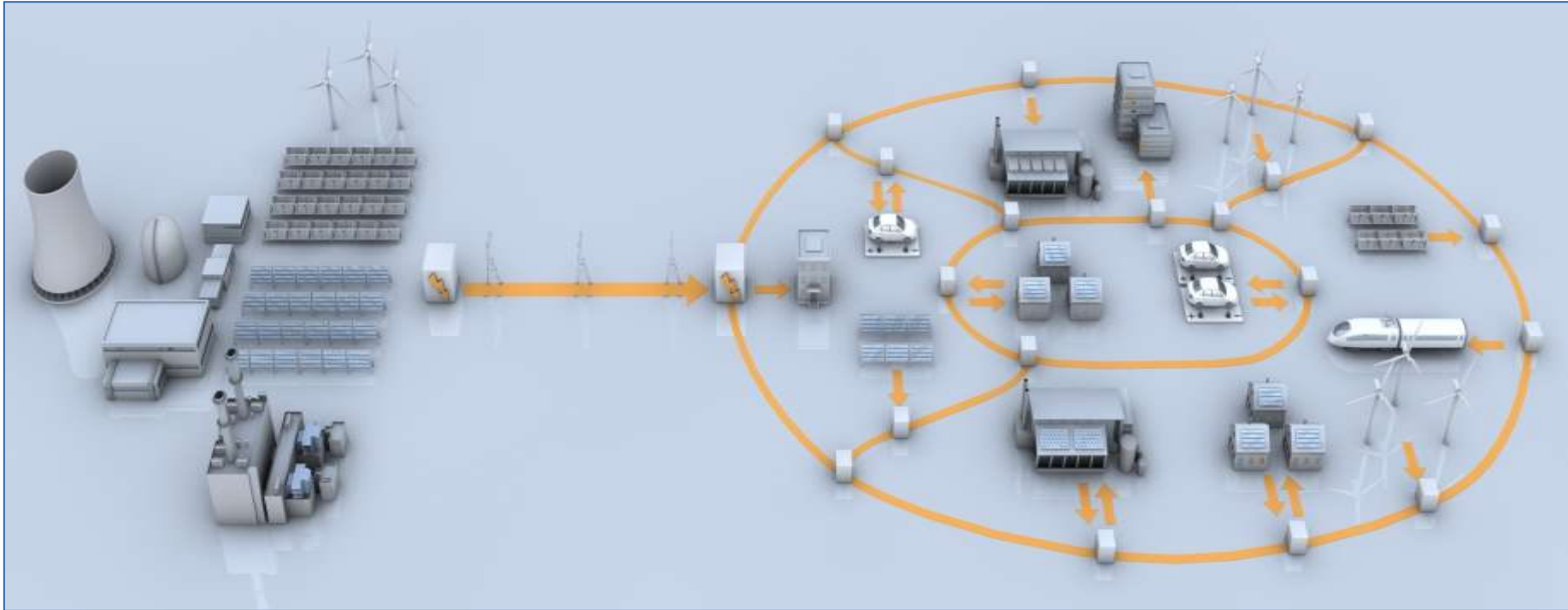
## NB Power – Becoming a Transformed Utility

Long Term Partners...





## The Future...The Smart Grid



Solar, Electric Vehicles, Wind, Thermal Storage...Connected