



UTC Power

A United Technologies Company

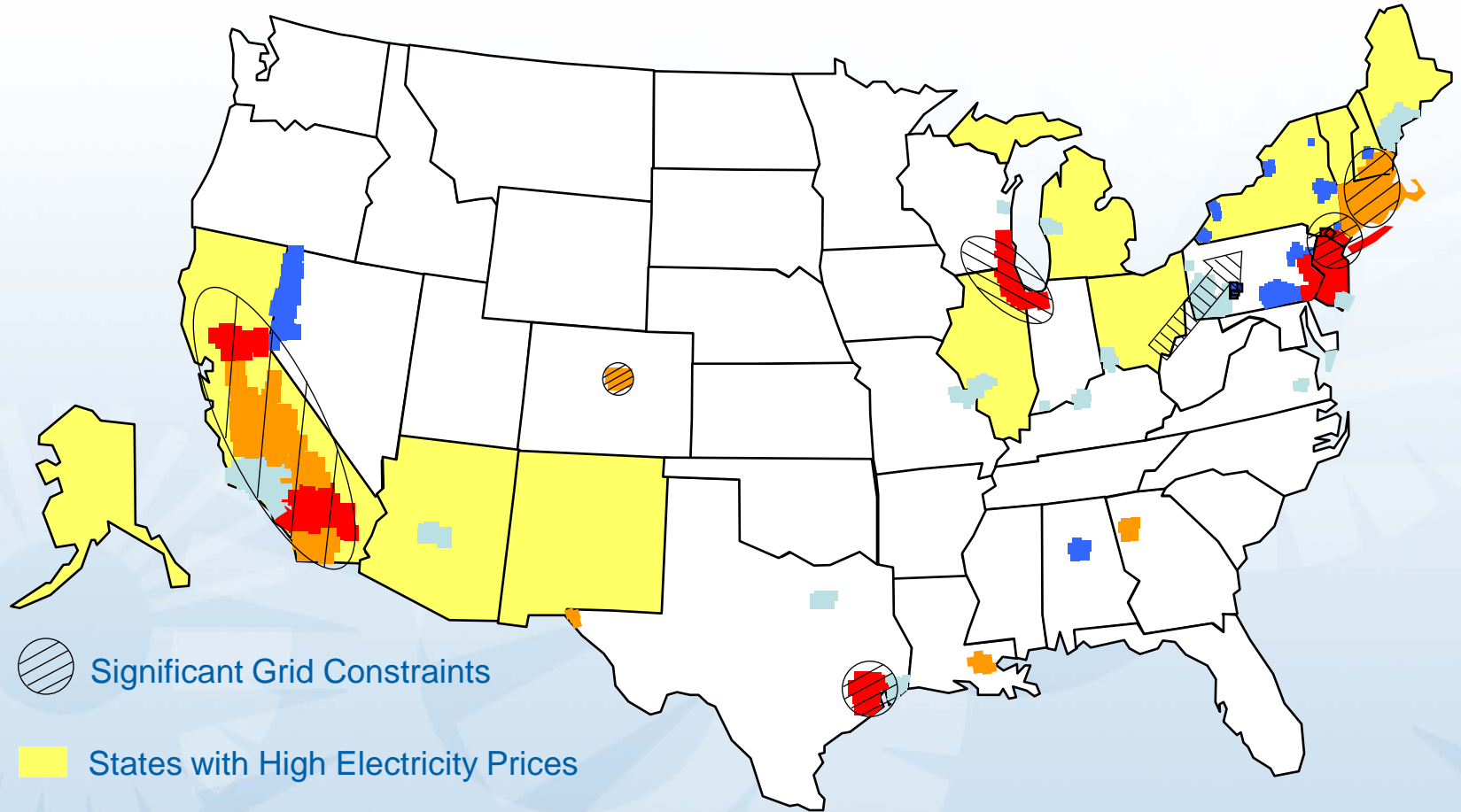
Establishing a Dynamic and Profitable Stationary Fuel Cell Industry

Katrina Fritz Intwala



IPHE – Hydrogen and
Fuel Cells Stakeholders
Berlin, Germany
November 17, 2011

Market Drivers – United States



 Significant Grid Constraints

 States with High Electricity Prices

Ozone Non-Attainment Classifications

 Marginal

 Serious

 Moderate

 Extreme (LA) & Severe

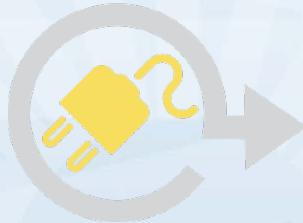
Source: Energy Information Administration

Energy Challenges

Rising energy costs



Strained utility grid,
unreliable power



Sustainability and
carbon reduction



Fuel Cell Solutions

- Significant Energy savings through:
 - 80 - 90% system efficiency
 - Combined heat and power
- Payback in 3-5 years

- Assured power generated on-site:
 - Business continuity
 - Risk mitigation
 - Can serve as emergency shelter

- Clean, quiet & virtually pollution free:
 - Reduced emissions
 - Zero water consumption
 - Replace nuclear production

Combined Heat and Power Best Fit

Facilities with 24/7 Power and Heating Demand

Supermarkets



Bottling



Hospitals



Mixed Use Residential



Hotels



Bio-tech/Industrial



Educational Institutions



Utilities

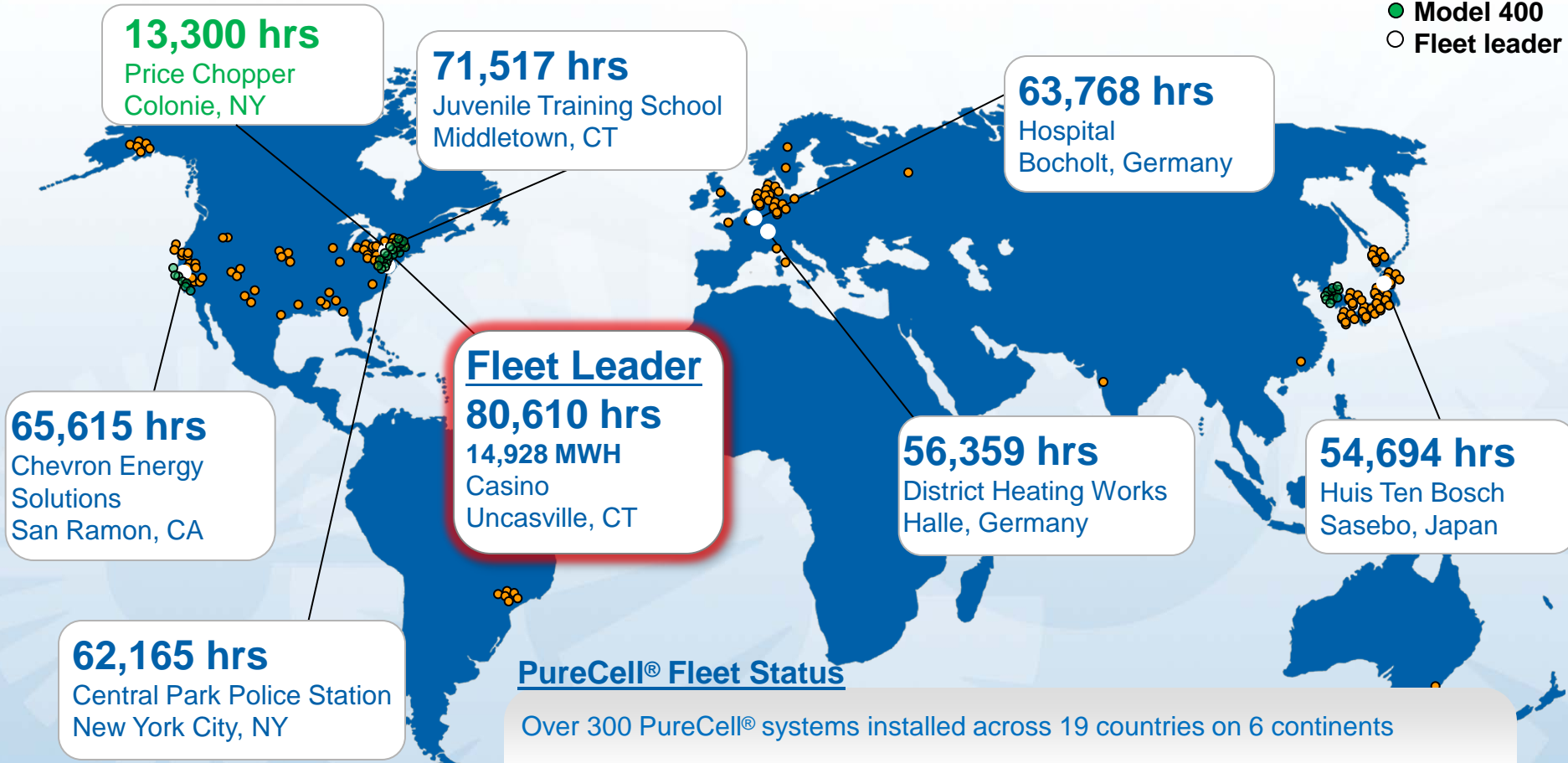


* Leadership in Energy and Environmental Design (United States Green Building Council's Rating System)

Information courtesy of UTC Power

Commercial Durability Today

- Model 200
- Model 400
- Fleet leader

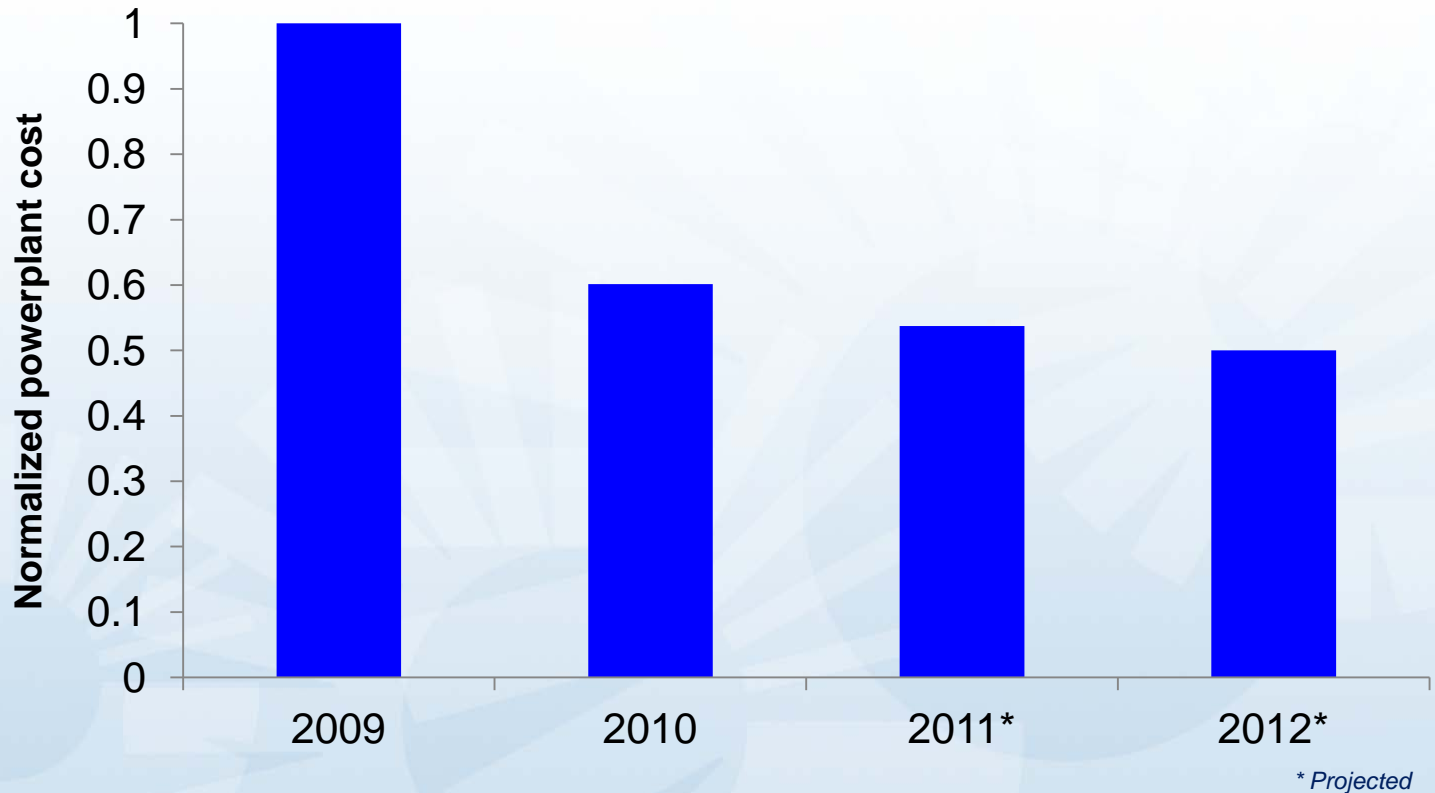


PureCell® Fleet Status

Over 300 PureCell® systems installed across 19 countries on 6 continents
More than 9.6 million hours of operation & 1.6 billion kWh of electricity produced
200 kW Units Exceeding 40,000 Hour First Stack Design Life
400 kW units reached 1 year of successful field operation

Information courtesy of UTC Power

PureCell® Model 400 Cost Reduction

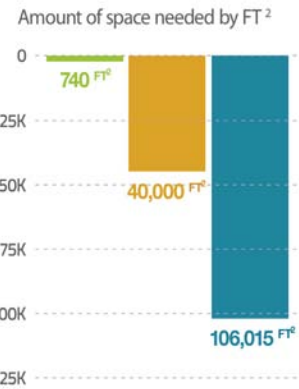
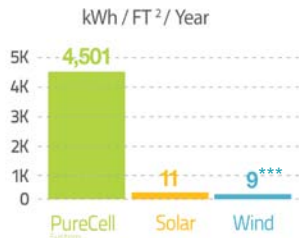


Tremendous cost reduction progress by leveraging technology improvements, low cost sourcing and manufacturing efficiencies

Information courtesy of UTC Power

A comparison of alternative energy systems – Fuel Cells, Solar and Wind

ENERGY DENSITY



CAPACITY FACTOR (availability)

Annual output divided by the rated AC output for 8760 hours.



VS.



VS.



ANNUAL CO₂ REDUCTION

Carbon dioxide (CO₂) saved annually, measured in kilograms, when compared to typical central generation.



🌳 = 250k Acres

Information courtesy of UTC Power



San Diego Albertson's

- Albertson's supermarket operates throughout September 2011 San Diego power outage
- Was one of the only retail stores in the valley operating during the crisis
- Despite the sweltering heat outside, Albertson's perishable inventory protected thanks to the continued operation of their fuel cell



“When you drive down the neighborhood and the only thing lit is Albertson's, it attracts people,”

-Rick Crandall, Director of Sustainability, SuperValu Inc.



Information courtesy of UTC Power

- Stationary fuel cells in commercial applications for many years
 - Move beyond demos and incentives
 - High volume orders = cost reduction
- Acceptance of distributed generation paradigm
 - Utility engagement and interaction
 - Continued education and marketing to all stakeholders
- Support that endures changing administrations
 - Short-term performance-based incentives (i.e. feed-in tariffs)
 - Fuel cells as part of new, long-term energy mix and energy efficiency initiatives

THANK YOU !

www.utcpower.com