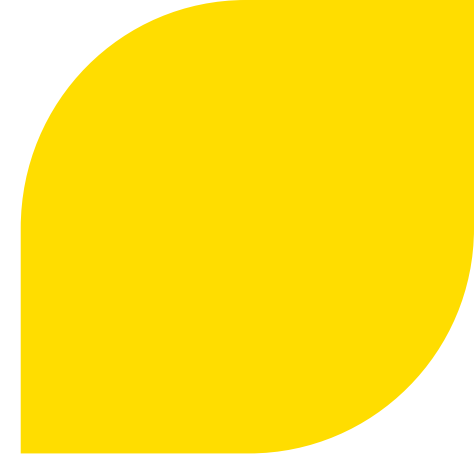


U.S. New Build Construction: Challenges and Solutions

Waste Management Conference
March 2, 2011
Phoenix, AZ

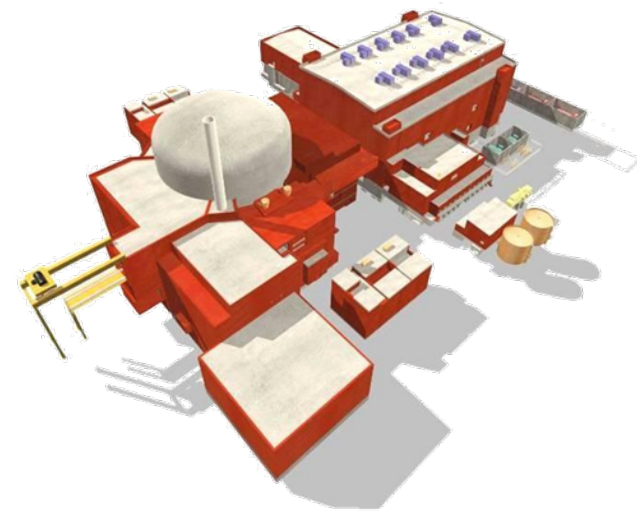


Mark Marano
SVP, U.S. New Plant Build Operations
AREVA Inc.



Keys to Success in Nuclear New Build

- » Developing experience and expertise
- » Establishing key partnerships
- » Developing appropriate supply chain and manufacturing capabilities
- » Understanding customer key concerns
- » Differentiating the model and tailoring the commercial approach



First Things First



▶ U.S. Energy Policy

- ◆ Climate change legislation
- ◆ National clean energy portfolio standard

▶ Federal Loan Guarantee Program

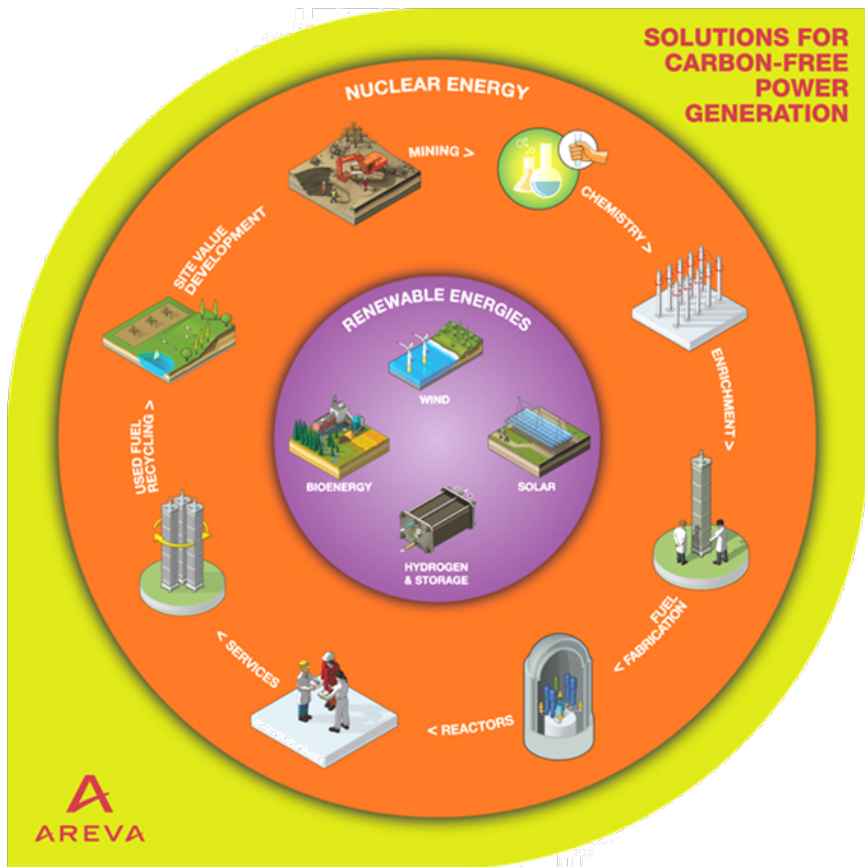
- ◆ Affordable credit subsidy fee
- ◆ Increased loan guarantee authority

▶ Deregulated Markets Most Challenged

- ◆ Economic recession = low load growth = low power prices
- ◆ CWIP not available
- ◆ No incentives for new baseload as price is set on the margin

»» The fundamentals must be in place to enable new nuclear

An Introduction to AREVA



- ▶ **AREVA is a global leader in solutions for CO₂-free power generation.**
- ▶ **AREVA's has two major carbon-free offerings:**
 - ◆ Nuclear Energy which covers every stage of the nuclear fuel cycle.
 - ◆ Renewable Energies for wind, solar, hydrogen and storage
- ▶ **48,000 employees**
- ▶ **Annual sales €8.5 billion**
- ▶ **Order backlog €43.3 billion**



An Energy Mix that meets our customers' requirements

AREVA is Gaining Advanced Reactor Construction Experience in Europe & China



Taishan 1&2, China



Flammanville 3, France

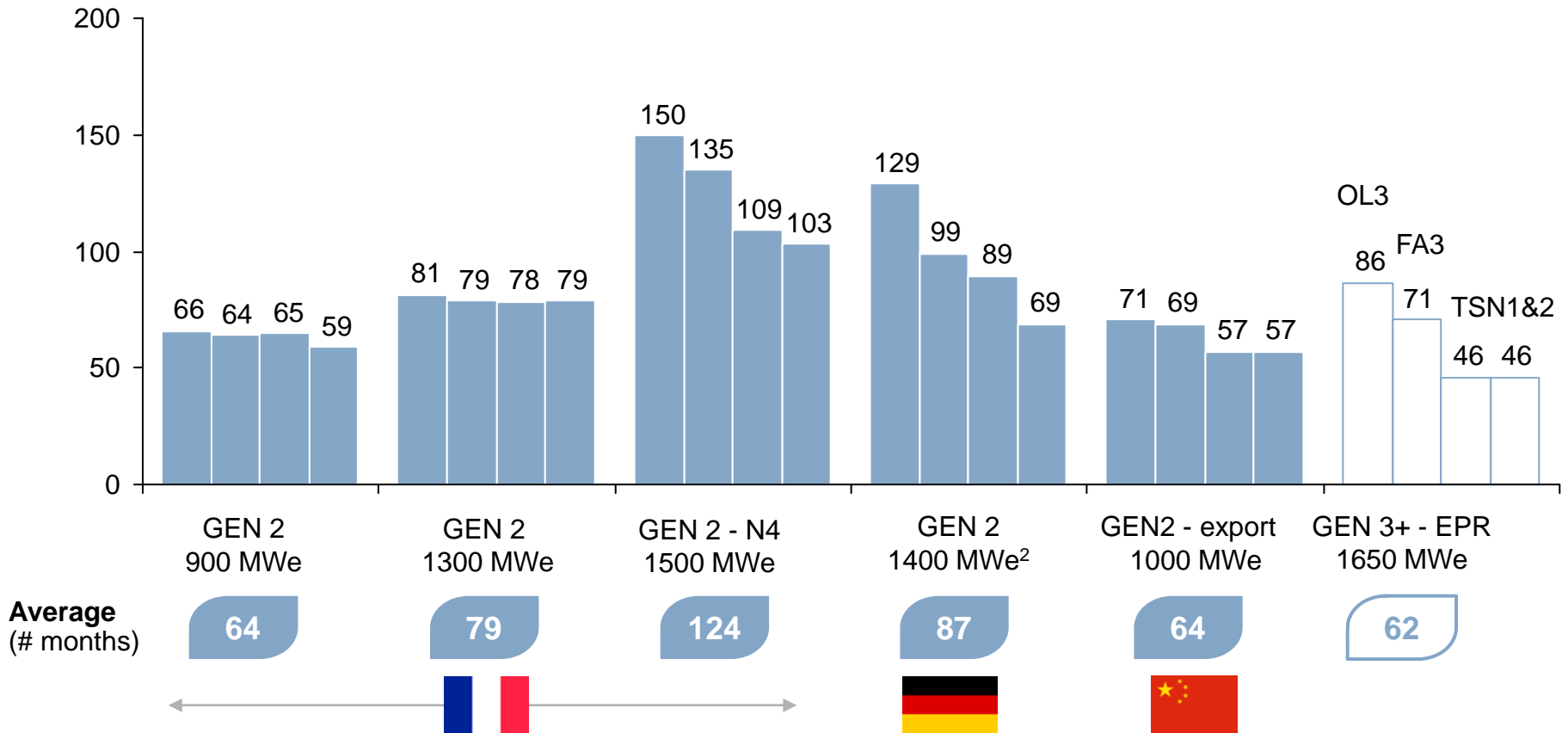


Olkiluoto 3, Finland

EPR™ Reactors: Average Series Construction Times In-Line with Other Series



Construction duration: 1st concrete to first criticality¹
 (# months)

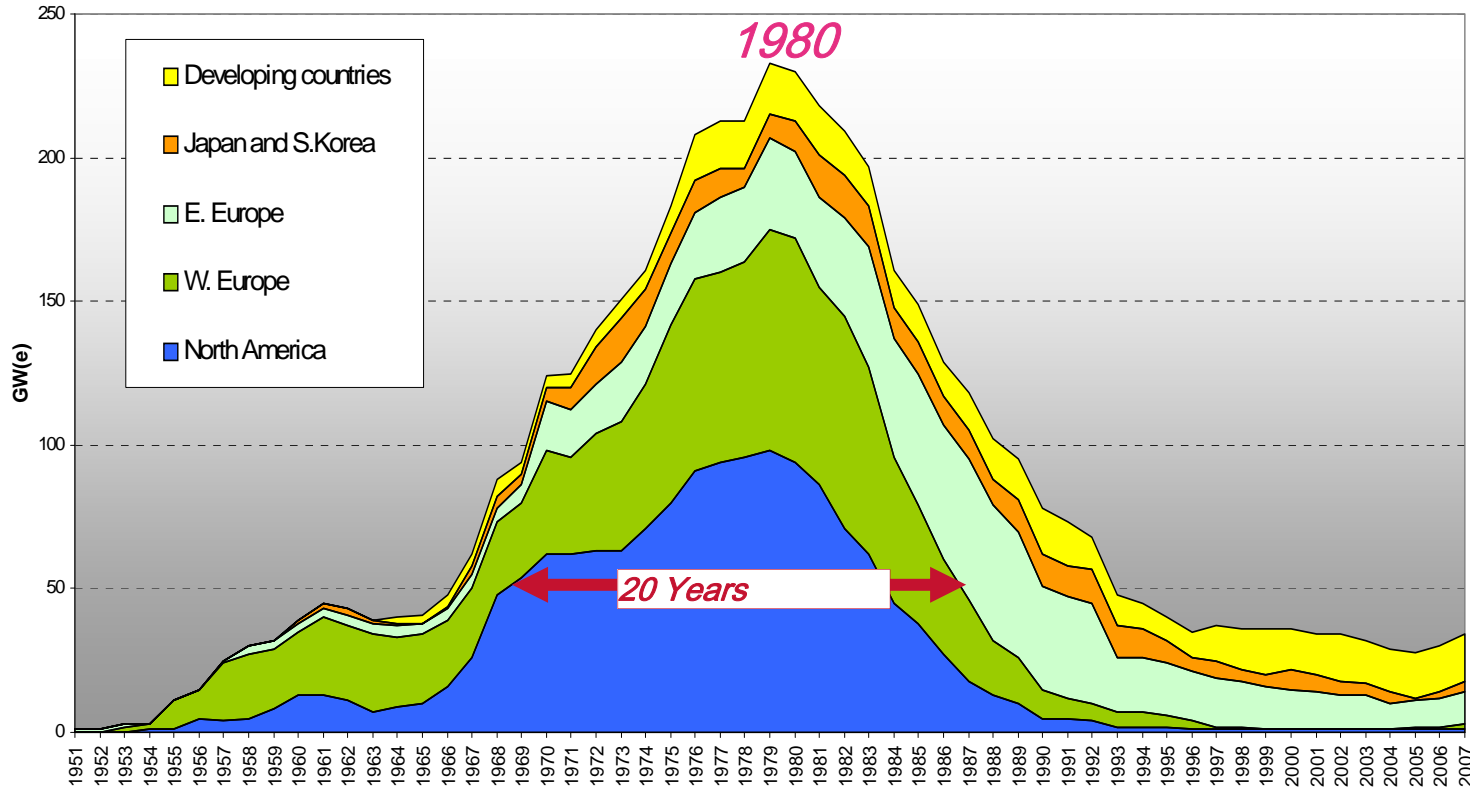


1. First four units per technological steps

2. First 3 plants are pre-KONVOI designs (Brokdorf, Grohnde, Philippsburg 2) and fourth plant refer to the average of the 3 KONVOI units started simultaneously

Source: IAEA; AREVA; EDF; CGNPC

Nuclear Grade Manufacturing Must be Expanded To Enable Nuclear Renaissance



source: IAEA 2008



U.S. new plant manufacturing base has disappeared

Certainty of EPR™ Supply Chain

AREVA is the supplier for:

- » **NSSS Components**
 - > Reactor Vessel
 - > Steam Generators
 - > Pressurizer
 - > CRDM
 - > Reactor Coolant Pumps and Motors
- » **Digital I&C**
- » **SR electrical components**
- » **Uranium Supply, Conversion, Enrichment, and Fuel Fabrication**

AREVA agreements:

- » **Bechtel A/E-C**
- » **Siemens T/G, I&C**
- » **Alstom T/G**
- » **JSW Forgings**
- » **MHI Manufacturing**
- » **Northrop Grumman Mfg.**
- » **Other global EPR plant components**
 - > ~ 20 suppliers

» **Key elements of the supply chain are under AREVA control**

Major Industrial Assets

» Continuous deliveries of quality products and process improvements for existing plants and new build projects

> Chalon Saint Marcel

- 30 years of operations
- Workshop: 39,000 m²
- Reactor Pressure Vessels, Steam Generators, Pressurizers, Safety Injection Accumulators
- ANS Nuclear Historical Landmark Award 2009



2900m²
extension
in 2006

> Sfarsteel (Creusot Forge)

- Heavy forging and machining
- Workshops: 85,000 m² (4 sites)



AREVA
since 2006

> JSPM (Jeumont)

- Reactor coolant pumps and motors, control rod drive mechanisms



2 new
production
lines by 2011
1200m² ext.
by 2012

Eagle Rock Enrichment Facility

» Project on track to produce SWU in 2014

- Conditional Loan Guarantee secured - \$2 billion to finance Eagle Rock
- PCM contractor search in progress
- NRC expected to issue license mid-2011
- Site Prep to begin 2011 under an NRC approved Limited Work Authorization
- Plant to start commercial production in 2014
- Production capacity to power 25 reactors for one year

» Creates 1,000 jobs during construction and 300 during operation



Eagle Rock Enrichment Facility

» Fuel to power current U.S. fleet and propel nuclear revival

AREVA & Partners Join Forces to Build Major U.S. EPR™ Components in U.S.

» AREVA Newport News Facility

> *Joint venture with Northrop Grumman and AREVA*

- A new U.S.-based manufacturing facility for heavy components for AREVA's EPR™ reactor customers
- Leverages Northrop Grumman Ship Building skilled resources for engineering and field support
- Option to expand to meet global demand for heavy components
- \$363 million project cost/540 permanent jobs
- Groundbreaking July 22, 2009/COD delayed to match market demand



» Alstom Chattanooga Manufacturing Facility

- > Facility to manufacture EPR™ turbine/generator
- > \$280 million project/350 permanent jobs
- > Inauguration June 24, 2010



Key Concerns Today from Financial and Industrial Investors

Costs concerns

- Overall profitability of investment
- Predictability of construction costs
- Recovery of costs in rates

Financing concerns

- Balance sheet strength vs size of nuclear investment
- Project completion
- Risk of company downgrading

Delivery models concerns

- Risk sharing and contracting mode
- Project management
- Resources constraints

Strategic concerns

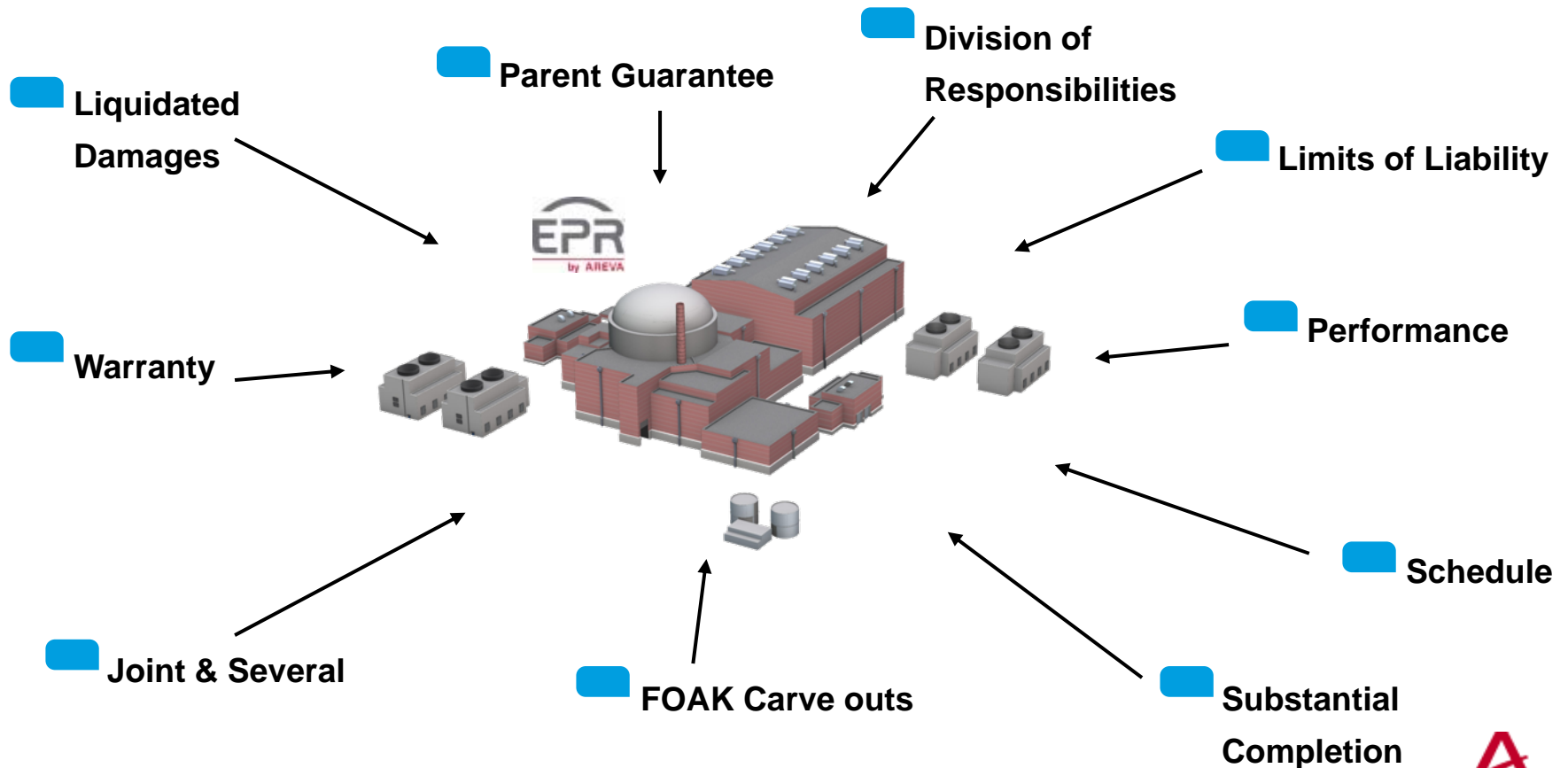
- Uncertain competitiveness to other fuels depending on fossil fuel and CO₂ prices in the future
- Security of uranium supply
- Waste management
- Speed-to-market (matching power needs and lead time to build power plants)

Operational concerns

- Safety of nuclear operations
- Ease of operations
- Integration to the grid
- Continuity of service

Each Project is Unique

» Every project contains elements of these commercial and risk attributes and must be tailored to meet the prior cost, financing, delivery, strategic and operational concerns:



Keys to Success in Nuclear New Build

- » Commitment
- » Experience & Expertise
- » Establishing Key Partnerships
- » Developing Supply Chain & Manufacturing Capabilities
- » Understanding the Customer & Tailoring the Commercial Approach

