



The EPR Flamanville 3 project

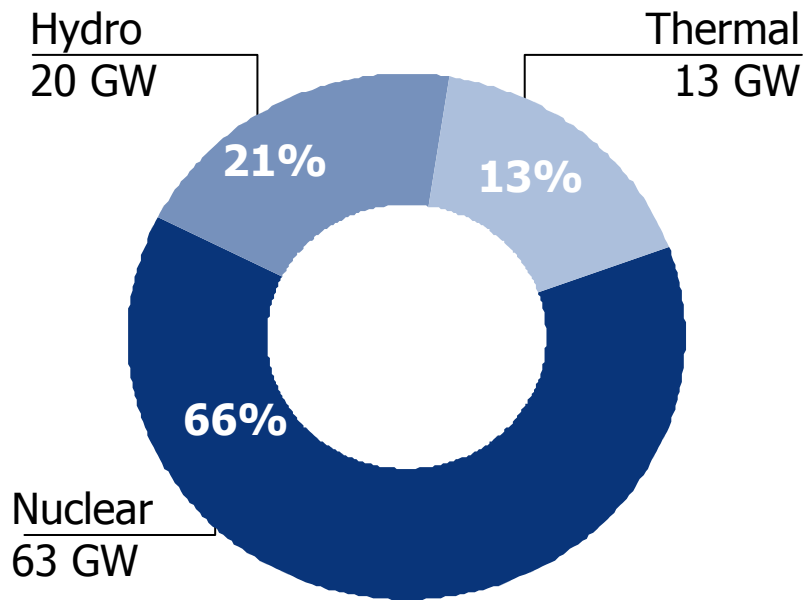
Goulven GRAILLAT

EDF, Generation - Head of Economics & Strategy

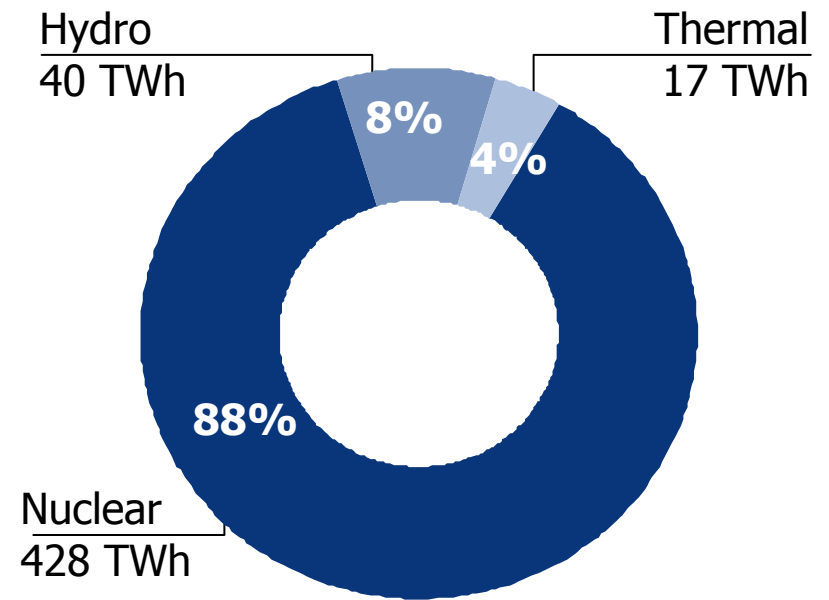


EDF's generation mix in France

Capacity (96 GW) 2006



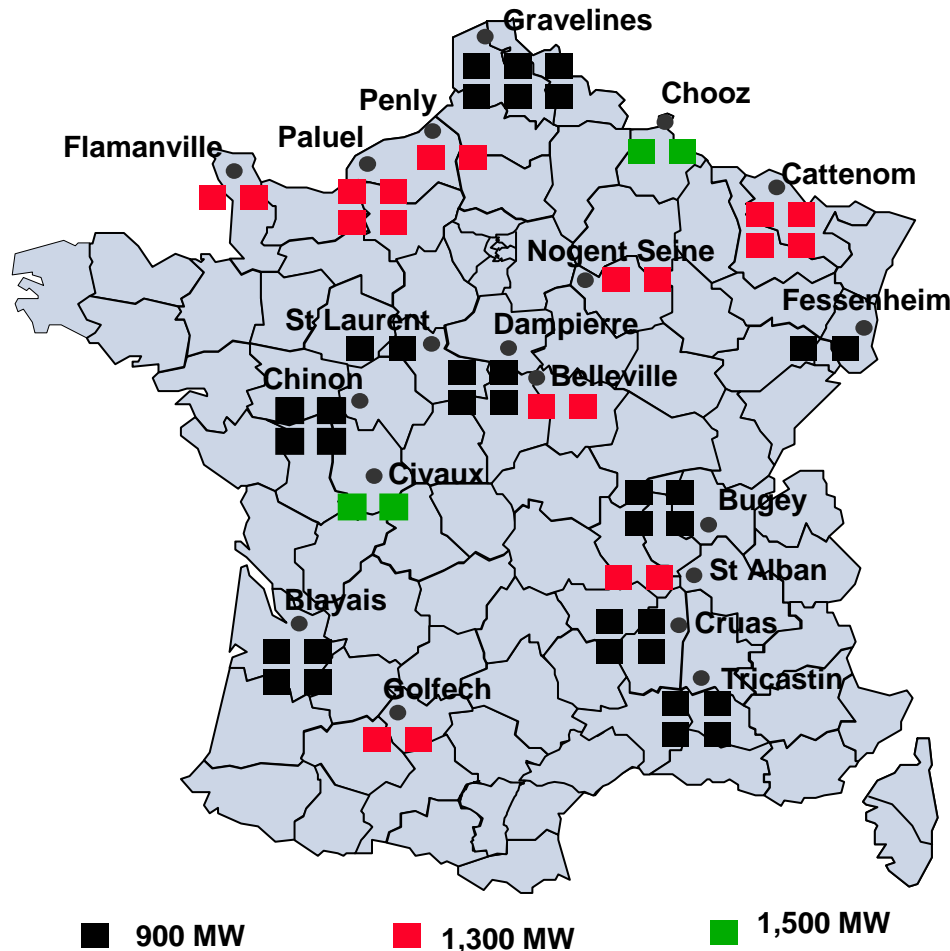
Generation (485 TWh) 2006





Characteristics of EDF's nuclear fleet

EDF's nuclear facilities in France



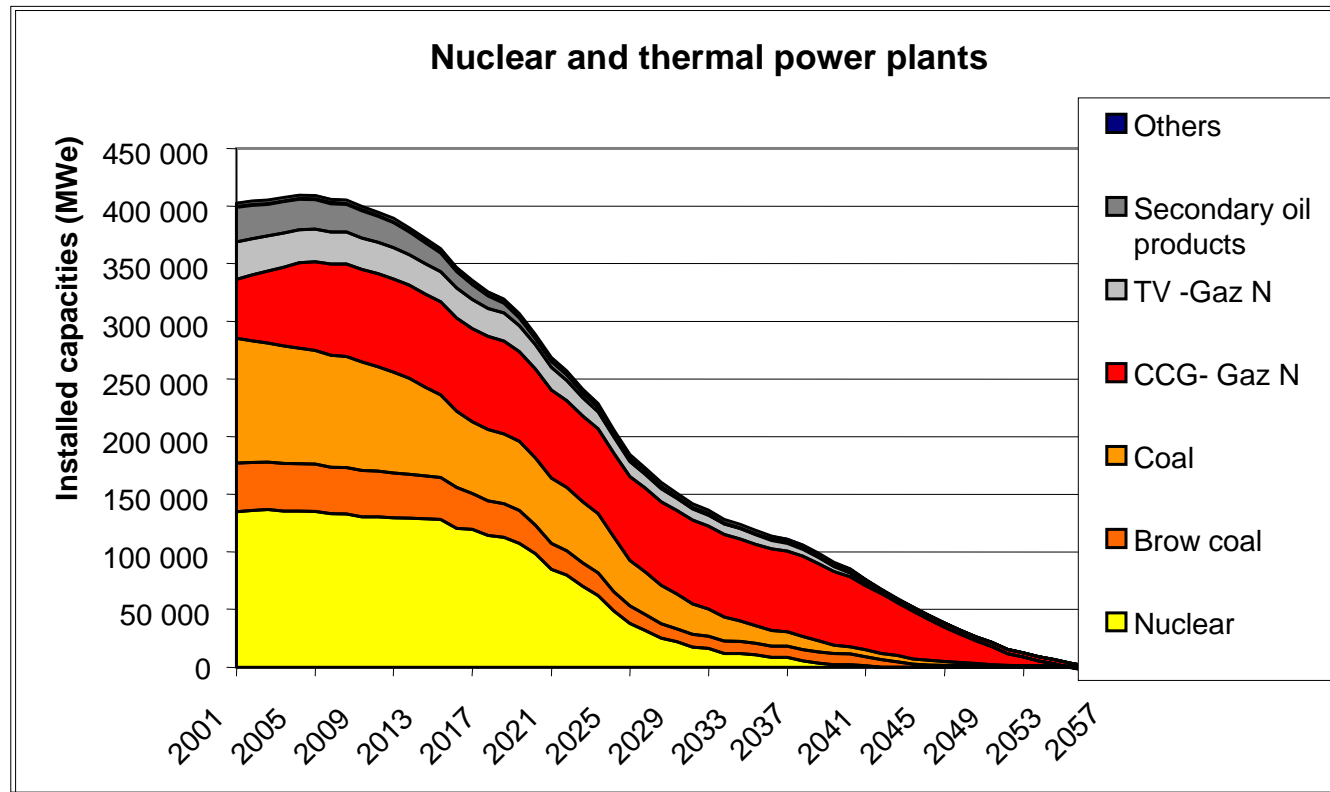
- 58 reactors in operation
- distributed over 19 sites
- single technology: PWR (“Pressurised Water Reactor”)
- 3 series :
 - 900 MWe: 34 units, 31 GW
 - 1,300 MWe: 20 units, 26 GW
 - 1,500 MWe : 4 units, 6 GW

■ EDF owns the nuclear power plants and the sites



European electricity mix closure trend

Fossil and Nuclear existing PP : shutdown between 2015 and 2030



**A need to replace at least 100 GW before 2020
and 150 GW more before 2030**



EPR design story

- **1991** Start of French - German cooperation between :
 - Utilities : EDF and German Utilities
 - Vendors: Framatome and Siemens
 - Nuclear Safety Authorities: DGSNR and BMU
- **1993** Joint recommendations from French and German Nuclear Safety Authorities
- **1995-1999** Launch and completion of the Basic Design project



EPR design story (cont'd)

- **2000** Joint assessment of the Basic Design Report by French & German Regulatory Bodies and issuance of “technical guidelines”
- **2001 – 2003** Detailed Design studies
- **2004** French Safety Authority officially approves EPR technical options and requires to comply with the “technical guidelines”



The « EPR Flamanville 3 » project

The industrial
stakes

Maintain EDF's industrial leadership
Prepare the renewal of our fleet

Safety issues

Reduce the probability of accident occurrence
Limit the consequences of potential accidents

Environmental
improvement

Reduce

- **Liquid radioactive waste per MWh produced by circa 30 %**
- **Gaseous waste per MWh produced by circa 30 %**



EPR Flamanville 3 key figures

Technical
performance

Net electrical power : 1600 MW

Service life : 60 years

Availability factor : 91%

Figures

Total investment : 3.3 bn €

Levelized production cost (first of a kind) : 46 €₂₀₀₅/ MWh

(including decommissioning cost and high level waste long term management cost)



EPR Flamanville 3 Licensing Process

Phase 1 **Choice of the site** **Apr. 2004 – Oct. 2004**

3 candidates:

- Flamanville (Normandy)**
- Penly (Normandy)**
- Tricastin (Rhône river valley)**

Phase 2 **Public debate** **Nov. 2004 – Apr. 2006**



EPR Public Debate

- A National Public Debate Commission, independent from the government,
- In compliance with the French environmental law
- **Nov. 2004** : Launching of the process
- **S1 2005** : Public debate preparation
(drafting of the owner file, NGOs preparatory consultation, ..)
- **Oct. 2005 - Feb. 2006** :
Public debate (21 meetings, more than 4000 participants,
many Q&As on Commission website,..)
- **Apr. 2006** : Final report by the public debate Commission
- **May 2006** : Decision to proceed by EDF's Board



EPR Flamanville 3 Licensing Process (cont'd)

Phase 3 Permitting, construction and commissioning

May 2006 : Application for “Authorisation to Create”

Summer 2006 : Launching of preparatory work on site

**6 year
duration**

11 April 2007 : Official Government authorisation for the
“creation” of the NPP (= construction)

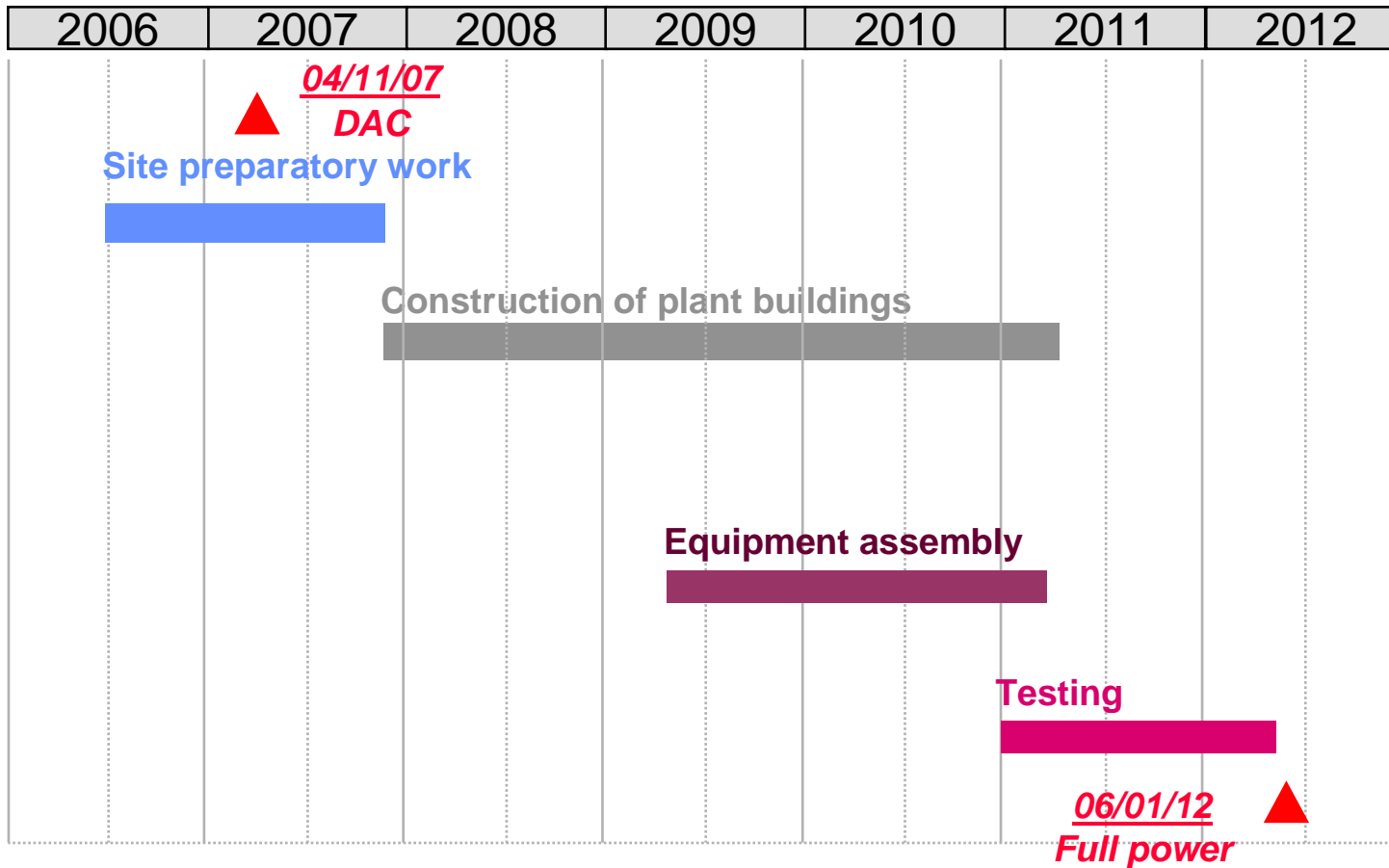
Dec. 2007 : “First concrete”

54 months of construction

June 2012 : Full power



EPR Flamanville 3 construction schedule





THANK YOU FOR YOUR ATTENTION