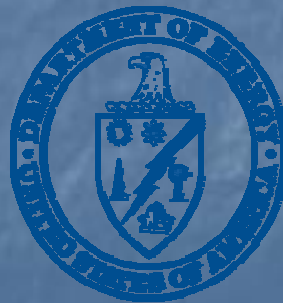


# Program Strategic Goals/ Feedback from Peer Review

Concurrent SESSION VIII -  
SPI Readiness Reviews  
and Program Strategic Goals



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# Program Strategic Goals

# Strategic Goals

## Program

- Develop HTS wire with 100 times the power capacity of the same size conventional copper wires at a cost of \$10/kiloamp-meter
- Develop HTS electric power equipment with one-half the energy losses and one-half the size of conventional units.

# Strategic Goals (continued)

## 2G Wire Fabrication

- Maximizing critical current is essential
  - 300-A, 100-m by 2006
  - **New (proposed): 200A, 4-mm wide, 3-T (H // c), 65K by 2008**
  - 1000-A, 1000-m (77K, H=0) by 2010
- Less 5% variation in electrical properties along the wire length
- Current increasing proportionally with HTS coating thickness
- **Mechanical and electrical requirements of power system applications met**

# Strategic Goals (continued)

## Performance Indicators for U.S. 2G Wire

Metric	A/cm width 77K, SF	Length	Cost	Annual Production
Current Status	70	100 m	—	—
2005	100	100 m	—	—
2006	300	100 m	—	—
2007	300	500 m	\$50/kA-m	200-1000 km
2010	1000	1000 m	\$10/kA-m	10,000 km

# Strategic Goals (continued)

## Performance Indicators for HTS Electric Power Equipment

	HTS Motors		HTS Generators		HTS Transformers		HTS Power Cables		
Metric	Voltage	Power	Voltage	Power	Voltage (kV)	Power (MW)	Voltage	Power	Length
Current Status		5,000 HP tested 2002 (AMSC)		1.7 MW Tested 2003 (GE)	13.8	1.7 Tested 2001 (Waukesha)	12.5 kV	25 MW	100 foot Operating Since 2000 (Southwire)
2005									
2006							34.5 kV	30 MW	0.2 miles
2007					138	1 (single phase)	138 kV	600 MW	0.5 miles
2008	4 kV	5 MW	13.8 kV	180 MW					
2009							161 kV	600 MW	4-km
2010	10 kV	5 MW	13.8 kV	340 MW	138	30	161-kV	750	6-km

# Potential New Initiatives

- Power and Delivery Reliability Initiative (PDRI)
- Conductor Design and Engineering Initiative (CDEI)
- High-voltage Cryogenic Dielectrics Initiative

# Feedback from FY 2004 Peer Review

# Overall SPI Comments

- Great overall results in FY04
- Most projects are making solid progress in achieving program goals
  - Waukesha/SuperPower failure and GE 2-year delay are exceptions
- Continue to improve risk identification and mitigation practices
- SPI applications need to be successful technically in order to meet future market needs

# Teaming

- There has been **excellent teaming between conductor manufacturers (industry), national labs, and universities**. Based on comments from equipment manufacturers in the SPI session, the program needs work on integrating their needs into the conductor development program
- **Teaming is essential**. The vertical integration and cross-communication is a model on how to optimize the synergy in complex technological programs.
- **The collaboration between national laboratories and private companies is excellent**. This certainly is a model to be followed in many other fields of science.

# Readiness Reviews

- This effort will have significant impact in reducing risks and help identify **unforeseen problem areas**
- Risk analysis and risk management is very important in advanced technology development like applied superconductivity.
- The Readiness Review process **is off to a solid start**

Thank you.  
Questions or Comments?