

# Roadmap to Secure Control Systems in the Energy Sector

## Energy Sector Control Systems Working Group

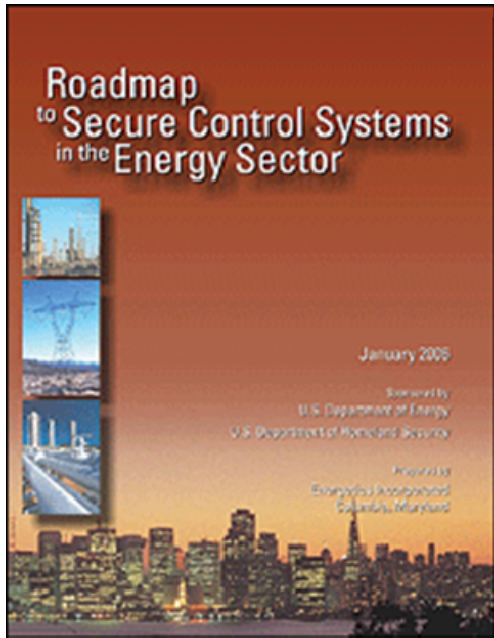
### ieRoadmap Workshop

Chicago, IL ♦ May 28-29, 2008

Hank Kenchington

U.S. Department of Energy  
Office of Electricity Delivery and Energy Reliability

# Roadmap – Framework for Public-Private Collaboration



- Published in January 2006
- *Energy Sector's* synthesis of critical control system security challenges, R&D needs, and implementation milestones
- Provides strategic framework to
  - align activities to sector needs
  - coordinate public and private programs
  - stimulate investments in control systems security

## Roadmap Vision

In 10 years, control systems for critical applications will be designed, installed, operated, and maintained to **survive an intentional cyber assault with no loss of critical function.**

# Key Strategies and Selected Milestones

Measure and Assess Security Posture	Develop and Integrate Protective Measures	Detect Intrusion & Implement Response Strategies	Sustain Security Improvements
Milestones	Milestones	Milestones	Milestones
<p>50% of asset owners &amp; operators performing self-assessments of their control systems using consistent criteria (2008)</p>	<p>Secure connectivity between business systems and control systems within corporate network (2009)</p>	<p>Cyber incident response is part of emergency operating plans at 30% of control systems (2008)</p>	<p>Compelling, evidence-based business case to increase private investment in control system security (2007)</p>
<p>Fully automated security state and common response of control system networks (2015)</p>	<p>Secure control system architectures produced with built-in, end-to-end security (2015)</p>	<p>Self-configuring control system network architectures are in production (2015)</p>	<p>Cyber security awareness, outreach, and education programs integrated into energy sector operations (2015)</p>

# ieRoadmap – “weapon of mass collaboration”<sup>1</sup>



## Web-based Tool Tracks R&D Projects

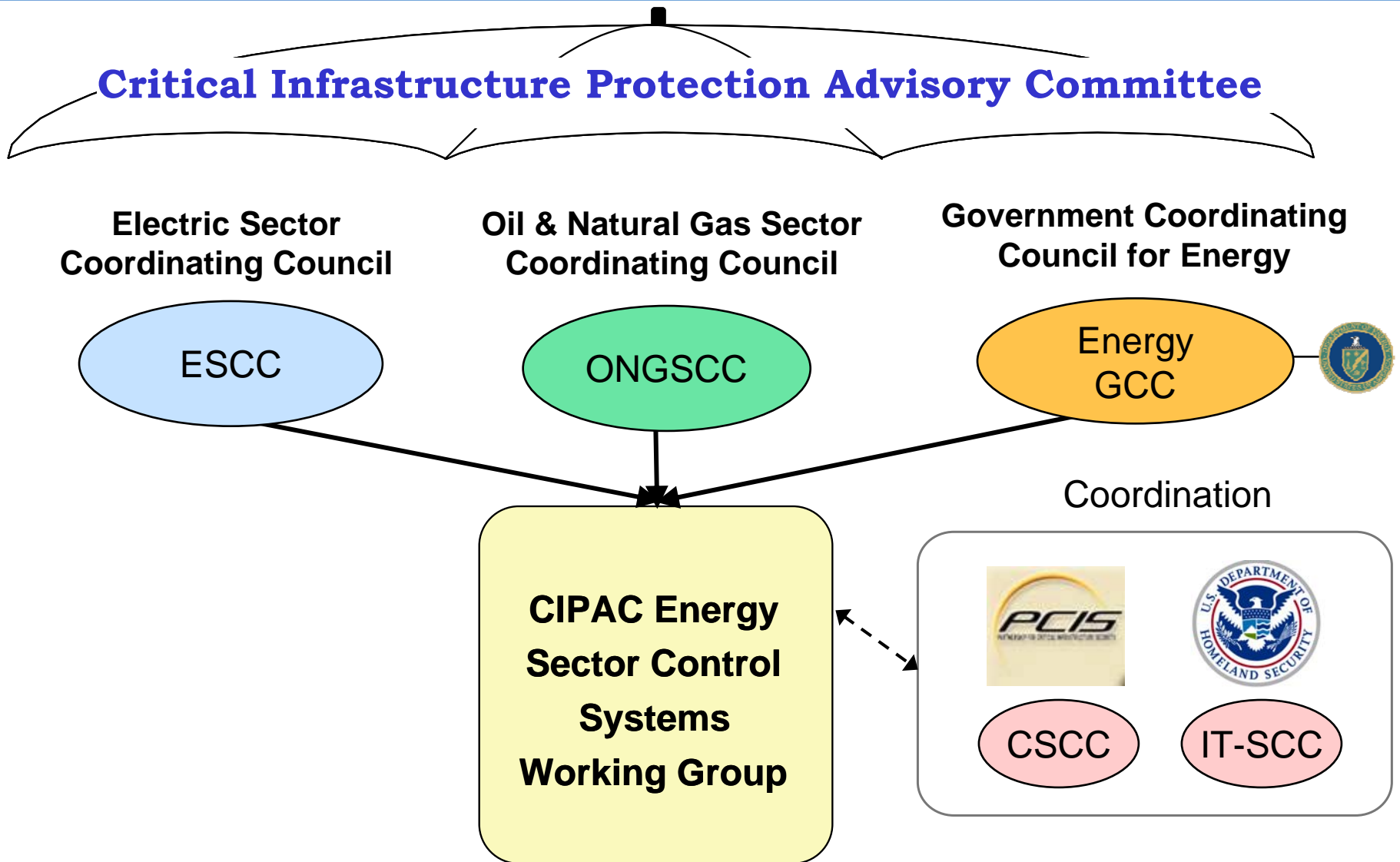
<b>Secure SCADA Communications Protocol</b>	
<b>Safe Mapping and Reporting Tool (SMART)</b>	
<b>Security Metrics for EMS</b>	
<b>SCADA Honeynet</b>	
<b>Survivability and Recovery of Process Control Systems - RiskMAP</b>	
Lead Organization:	I3P
Principal Investigator:	MITRE
Contact Name:	Jim Watters
Contact Email:	jwatters@mitre.org
Contact Phone:	781-271-2162
Last Edited:	2/19/2008 4:26:55 PM
Project Start Date:	4/2007
Funding To Date:	\$100K-\$500K
Technology Readiness:	Ready for Release
Project Participants:	MITRE
Project Description:	RiskMAP is a proven Risk-to-Mission Assessment Process tool that models key features of a corporation from the business objectives to the operational tasks and information assets needed to achieve them, to the network nodes that store, send and make the information available. RiskMAP uses the same model to map risks at the network level up to the business objectives level providing the corporate executive with solid, credible support for risk mitigation decisions.
Preliminary Results/Deliverables:	The first commercial tool using RiskMAP technology is in development by Matrikon, Inc
Website:	<a href="http://www.thei3p.org/projects/pcs07overview.html">http://www.thei3p.org/projects/pcs07overview.html</a>
Project Mapped To:	Roadmap challenges in the following areas: Measure and Assess Security Posture, Develop and Integrate Protective Measures, and Sustain Security Improvements

- Over 90 control systems R&D projects mapped to the Roadmap by 18 organizations
- Helps identify active areas and exposes gaps in R&D
- Helps R&D partners collaborate and leverage resources
- Informs owners and operators of emerging technologies

[www.pcsforum.org/roadmap](http://www.pcsforum.org/roadmap)

<sup>1</sup>“Wikinomics, How Mass Collaboration Changes Everything”, Tapscott and Williams

# Energy Roadmap Working Group Structure

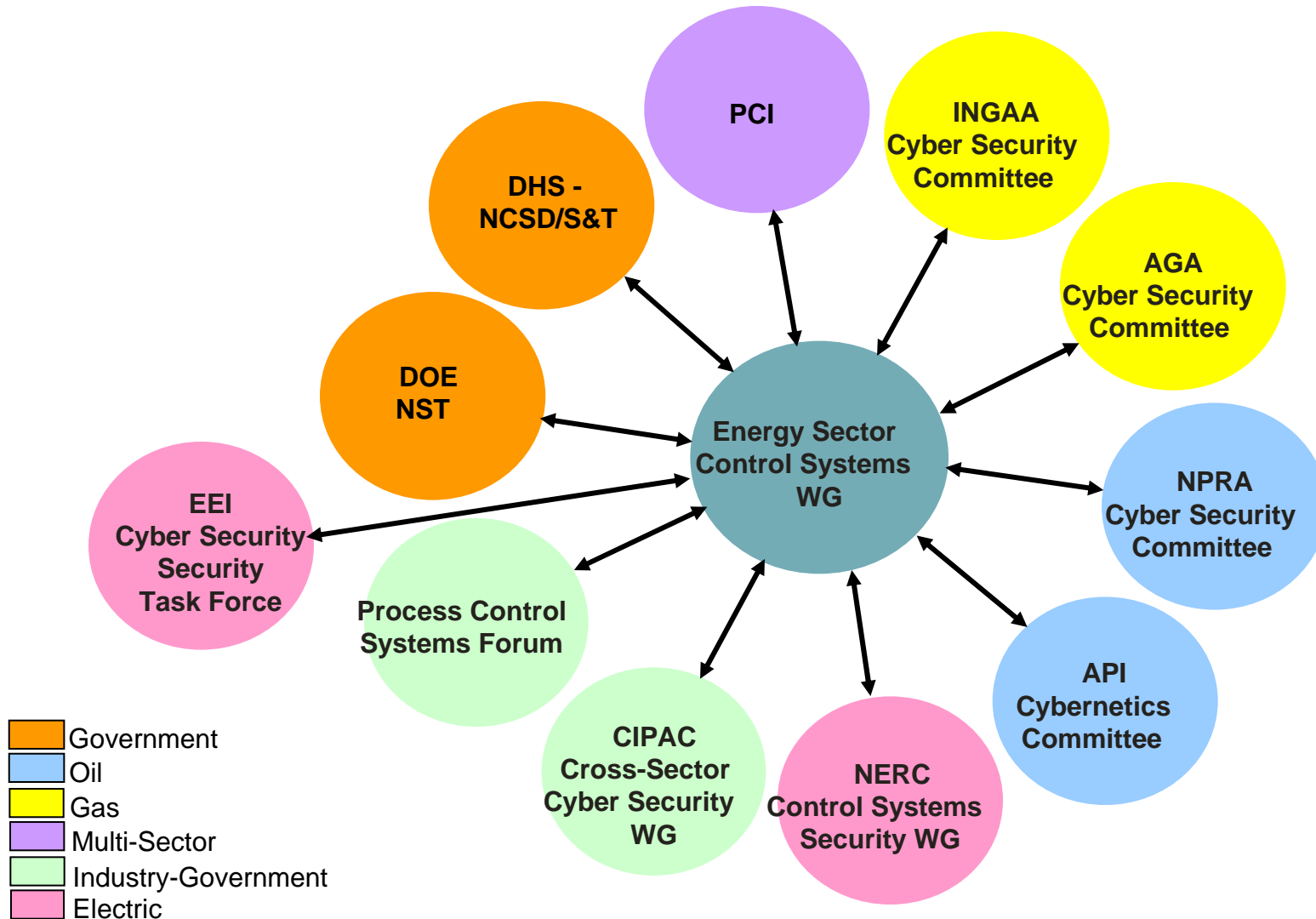


# Energy Working Group Members

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- Dave Batz, Alliant Energy (NERC, AGA)
- Stuart Brindley, IESO Ontario (NERC, PCIS, CSCSWG)
- Page Clark, El Paso Corporation (INGAA)
- Steve Elwart, Ergon Refining Company (NPRA, I3P, CI/KR RAMP)
- Eric Fletcher, NiSource
- Tom Flowers, CenterPoint Energy, Inc. (NERC)
- Ed Goff, Progressive Energy (NERC, EEI)
- Morgan Henrie, Alyeska Pipeline (API)
- Hank Kenchington, DOE (PCSF, CSCSWG)
- Doug Maughan, DHS S&T
- Seán McGurk, DHS NCSD (PCSF, CSCSWG)
- Dave Norton, Entergy Corporation (NERC, PCSF, IEEI, InfraGard)
- Dave Scheulen, BP (API)

# Energy Working Group – leveraging connections





# Working Group Objectives

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1. Help identify and implement practical, near-term activities that are high priority for the industry
2. Promote the value to the industry of achieving the goals of the Roadmap
3. Recommend critical areas for public and private investment
4. Measure progress toward Roadmap goals and milestones



# First-ever ieRoadmap Workshop

## May 28-29, Chicago, IL

ie Roadmap  
interactive energy Roadmap  
to secure control systems

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### ADDRESSING ROADMAP CHALLENGES

- Overview
- Working Group
- Strategies
  - Measure and Assess Security Posture
  - Develop and Integrate Protective Measures
  - Detect Intrusion and Implement Response Strategies
  - Sustain Security Improvements

### 2008 WORKSHOP

- Overview
- Agenda
- Accommodations/Travel
- Registration
- Call For Presenters
- Presenter Guidelines

SEARCH PROJECTS

ADD A NEW PROJECT

LEARN ABOUT THE ROADMAP

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Home > 2008 Workshop

### 2008 ieRoadmap Workshop

2 days, 40+ control systems security champions, and YOU!

Introducing the first-ever ieRoadmap Workshop: Chicago

The ieRoadmap Workshop is where you will hear first-hand about the most up-to-date research activities aligned with the [Roadmap to Secure Control Systems in the Energy Sector](#).

Participation at the workshop, either as an attendee or as a presenter, will give you the opportunity to meet personally with the [Energy Sector Control Systems Working Group \(ESCSWG\)](#)—a group of private sector and government leaders working to facilitate and guide the implementation of the Roadmap. The combination of presentations from subject matter experts and unrivaled networking opportunities make the 1st ieRoadmap Workshop an opportunity not to be missed.

Seats are limited. [Register now](#) to guarantee your participation!

Projects posted to the ieRoadmap have already been nominated for presentation at the workshop.

If you are leading a project that fits within the strategic framework of the ieRoadmap, see the following links for more information about presenting at the 2008 ieRoadmap Workshop.

- Learn more about [showcasing your research](#)
- Learn more about the [presentation guidelines](#)

Save The Date!

May 28-29, 2008

[The Drake Hotel](#)  
[Chicago](#)

- Opportunity for ieRoadmap “supporters” to talk directly with key industry decision makers
- Feedback on how each project aligns with Roadmap goals and potential ways to improve the relevance
- Learn firsthand about the most up-to-date energy control system security activities
- Raise awareness, foster an exchange of technical information and ideas, and identify collaborative opportunities
- Open to all energy sector stakeholders

[www.pcsforum.org/roadmap](http://www.pcsforum.org/roadmap)

For more info contact:

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[www.oe.energy.gov/controlsecurity.htm](http://www.oe.energy.gov/controlsecurity.htm)

**NSTB**

*Enhancing control systems security in the energy sector*

# Many control system activities, not enough coordination

