

# Simulator Training For Veterans and Community Colleges

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# DOE Smart Grid Work Force Training Project

## Massive Simulations for Smart Grid Operators

### Objectives

- Develop the PowerSimulator to scale from single user to massive drills with hundreds of participants
- Extend PowerSimulator to model cascading outages
- Include Smart Grid technologies wind, solar, DSM, EVs
- Build models of the eight NERC regions
- Recruit, train, certify and place military veterans as power system operators
- Capture knowledge of experienced power system operators and transfer this to next generation of operators
- Donate PowerSimulator and on-line modules for use at 20 universities and colleges

# Operator Training

ZagOps Lab  
Gonzaga University



# Restoration Drills

## Northern California Restoration Drill

- Eight simulation sessions
- 64 logged on users



# Operator Training

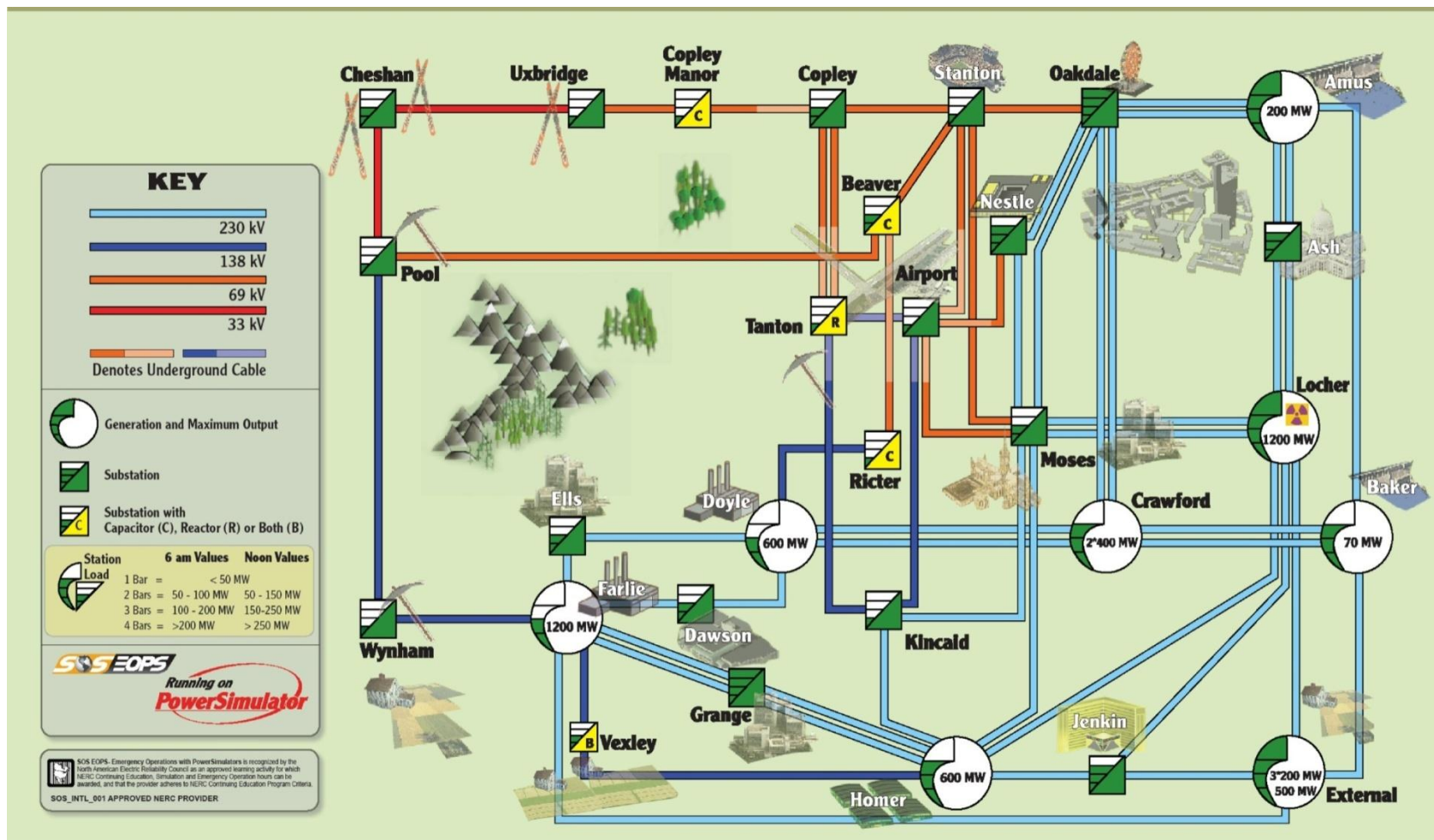
## Iraq Ministry of Electricity National Dispatch Center

- Located Al Ameen, Iraq
- New and Incumbent Engineers
- Generic PSM for principles
- Custom Iraq Model
- Remedial Action Schemes





# PALCO – Generic PowerSimulator





# Power4Vets

Veteran Training, Certification and Placement

# Summary

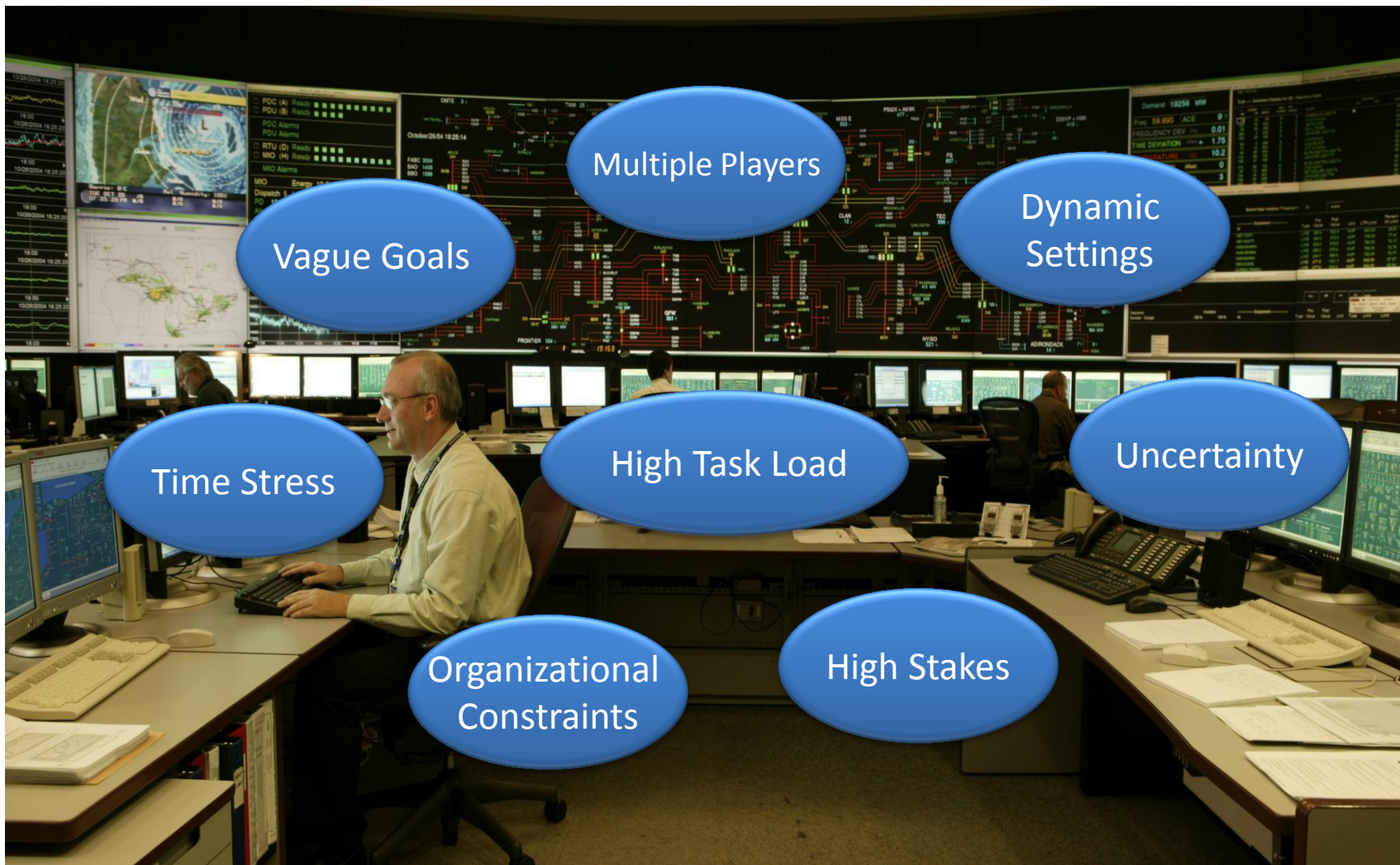
- Around 6000 NERC Certified System Operator Positions for Balancing, Transmission and Reliability Coordination.
- Power4Vets is a program to recruit, train, certify and place veterans as System Operators.
- Navy Nuke, Army Prime Power are most highly qualified.
- NO training cost to the veterans.
- Power4Vets is funded by ARRA through the Energy Department's Smart Grid Workforce Training program.



# Address by President Obama, Aug 5, 2011 Navy Yard, WA DC.

- Today's veterans face unique challenges:
- As of June, one million veterans were unemployed and the jobless rate for post-9/11 veterans was 13.3 percent.
- And as we end the war in Iraq and wind down the war in Afghanistan, over one million service members are projected to leave the military between 2011 and 2016.
- **A Challenge to the Private Sector to Hire or Train 100,000 Unemployed Veterans or Their Spouses by the End of 2013.**

# The Challenge of Decision Making



Source: Doug Harrington



# Power4Vets Curriculum

- Reliable Switching Operations
- Managing MW Flows
- Voltage Control – Preventing Voltage Collapse
- Handling Major Outages – System Shutdown
- System Restoration
- Generation
- Balancing
- Interchange
- Introduction to Power Markets
- Review of NERC Reliability Standards



# Power4Vets

## System Operator Training Pipeline

- **354** Veterans Signed Up
- **192** Students studying fundamentals
- **126** Students in Emergency Operations
- **18** Students in NERC PREP
- **20** Students NERC Certified
- **39** Students Placed or Promoted

# Power4Vets graduates now work for...

1. Avista
2. BPA
3. Puget Sound Energy
4. LADWP
5. EDP Texas
6. Indianapolis P & L
7. Lower Colorado River Auth.
8. Sharyland Utilities
9. PSCo. of New Hampshire
10. Lafayette Utilities System
11. Lafayette Utilities System
12. Pend Oreille PUD
13. Portland General Electric
14. Alcoa
15. IncSys and PowerData
16. Xcel Energy
17. MidAmerican Energy
18. Wind Energy Transmission Texas
19. Siemens
20. NERC

# Academic Software License

- 3 years, free access to academic PowerSimulator and training modules.
- DOE Smart Grid Work Force Training Program Cost Sharing Contribution.



# Academic Partners

1. Cascadia Community College, WA
2. Centralia Community College, WA
3. Chattanooga State CC, TN
4. Clark Community College, WA
5. Front Range Community College, CO
6. Grays Harbor College, WA
7. Idaho State University, ID
8. Lake Washington IT, WA
9. North Dakota State University, ND
10. Pacific Center Advanced Technology Training, HI
11. Penn State University, PA
12. Texas A&M University, TX
13. University of Hawaii, HI
14. Whatcom CC, WA

# How Do You Make the Transition?



pictureYouth.com



# Simulator Training Modules

- EOPS - 53 Modules
- Each module has a flash tutorial presentation
- Modules have simulator exercises
- Accessed over high-speed internet connection
- Available online 24 hours a day, 7 days a week
- Support available 24/7

# System Operations Careers

- On the front lines ensuring the reliable delivery of electricity to consumers, businesses and industry.
- Manage the power grid from a set of computer consoles within a control center environment
- Interact with field crew, general personnel, substation personnel, and with other system operators.

