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# Invenergy

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## Public Information Meetings

Proposed SCA Amendment for GHEC Expansion

July 2010

# Overview

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- Introductions
- Invenergy
- Project
- Combined Cycle plant
- Benefits – Project/Expansion
- December public meeting & MDNS
- Conclusion

# Introduction – Brett Oakleaf

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## □ Background

- 20 year energy/electric utility industry experience
- Various roles
  - Marketing, Resource Planning, Consulting, Operations
- Invenergy - Director of Business Development
  - Natural Gas focus for Western US
  - Project Manager for GHE Expansion

# Introduction – Todd Gatewood

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## □ Background

- 29 years experience in the energy/power industry
- Various roles
  - Construction, commissioning, maintenance, and operations
- Over 10 years experience with Combined Cycle plants
- Directly involved in the commissioning, operation, and/or management of 9 combined cycle plants (~ 7,000 MW)

# Invenergy North America

## Introduction

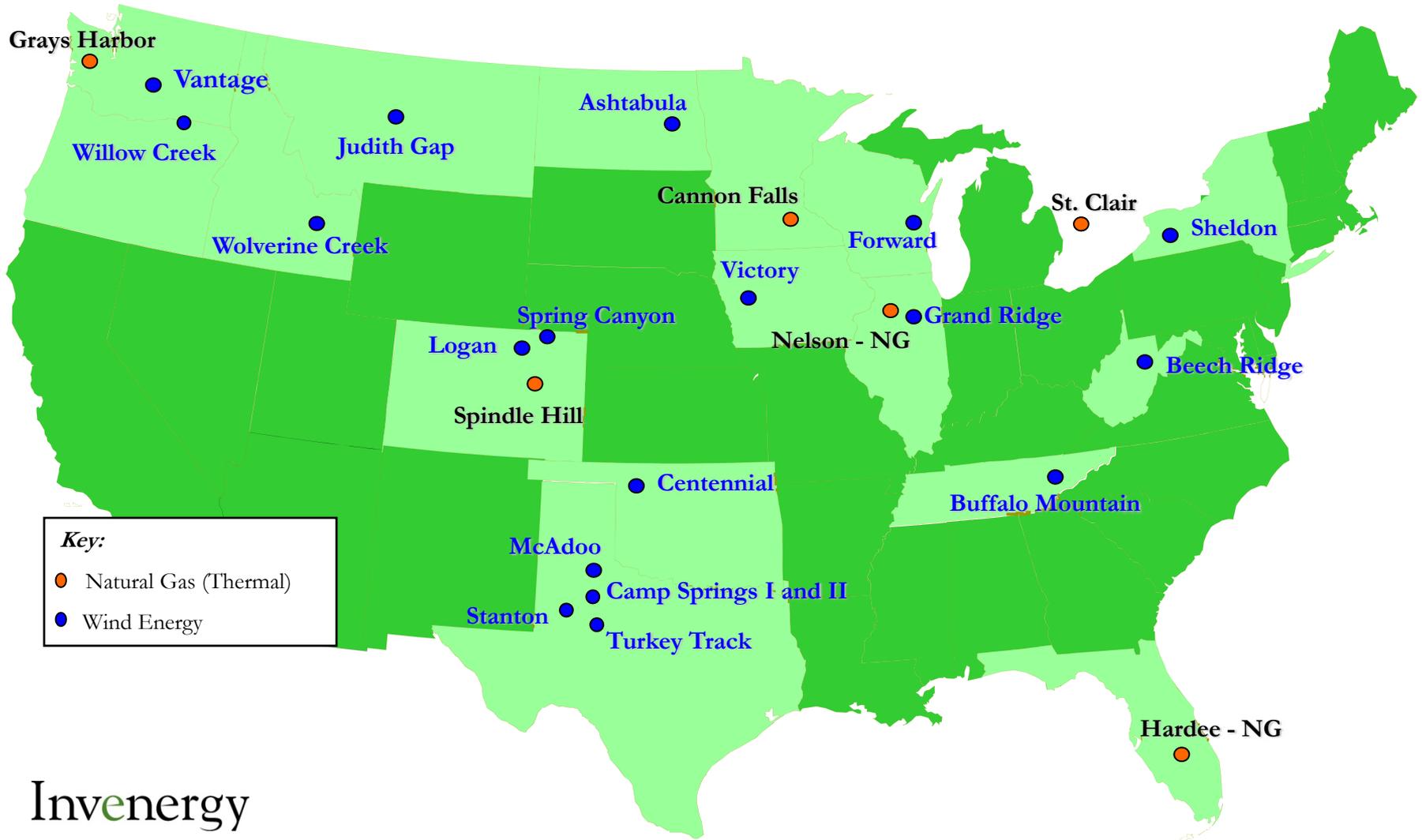
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- ❑ Developer, owner and operator of power generation projects.
- ❑ Focused on the development of natural gas and renewable energy projects.
- ❑ Invenergy management team is headquartered in Chicago with regional offices in Austin, Denver, Washington D.C. and international offices in Toronto and Warsaw.
- ❑ More than 5,000 MW of thermal and 18,000 MW of wind under development and in operation.



# Invenergy North America

## Wind and Thermal Operating Facilities - Map



# Grays Harbor Energy Center - Existing

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- 650 MW (2x1 Combined Cycle)
- Project History
  - Acquired – Feb 2005
  - COD – June 2008
- Invenergy values GHE ownership and expansion
- Community



# Grays Harbor Energy Center - Proposed

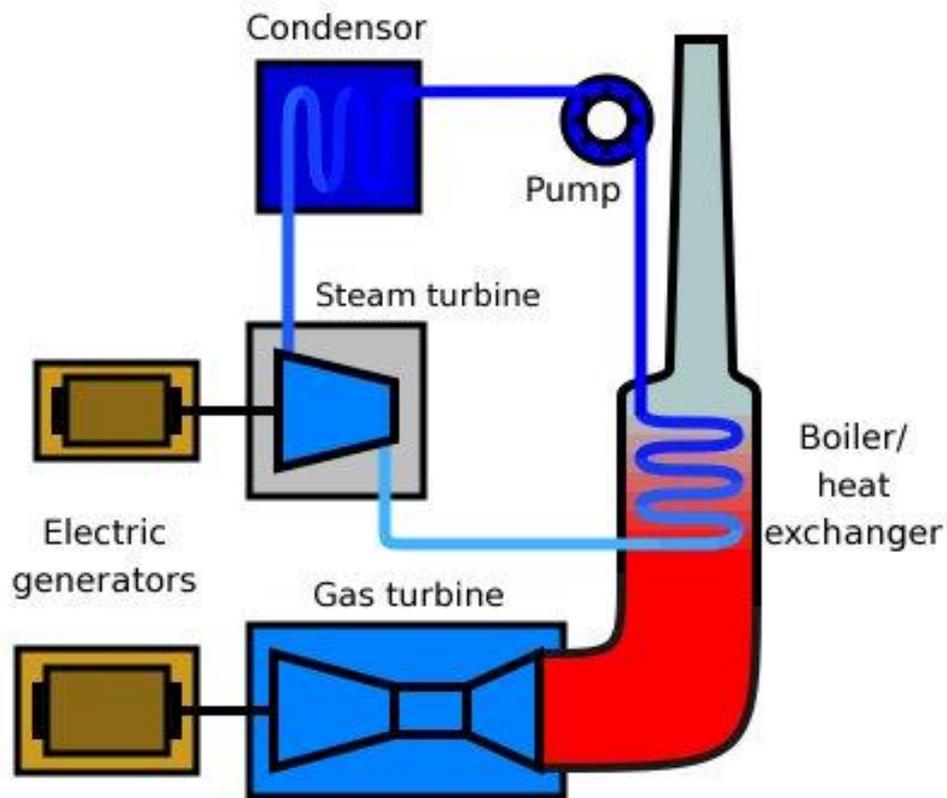
- Adding additional 650 MW (2x1 Combined Cycle)
- Expansion utilizes existing infrastructure
  - Electrical
  - Natural Gas
  - Water
  - Land Use
- Mitigated Determination of Non-Significance (MDNS) granted Feb 2010



Source: 3D Scope

# What is a Combined Cycle power plant?

- ❑ 2x1 Combined Cycle
  - 2 Combustion Turbines
  - 1 Steam Turbine
- ❑ Combustion Turbine
  - Similar to Jet Engine
  - Fuel – Natural Gas
- ❑ Captures “waste” heat to be used in steam turbine
  - Highly efficient
- ❑ Typical run time or annual capacity factor = 40 – 60 %
- ❑ State of Art/Low Emission/BACT facility



# Project Benefits

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- ❑ More Efficient, Dispatchable Generation
  - Added electrical generating capacity
  - Highly efficient design
  - On-demand power helps integrate renewable resources
  
- ❑ Clean, Environmentally Beneficial Energy
  - Low Emission Natural Gas
  - Low Carbon Fuel
  
- ❑ Taking Advantage of Developed Site
  - Use of Existing Site and Infrastructure
  - Avoids environmental impact from new development

# Expansion Benefits

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## ■ Construction

- Direct - Workers (up to 500 jobs for ~ 22 months)
- Approximately \$22 Million in wages
- Approximately \$28 Million in local material, supplies, and subcontractors
- Secondary Business Effects

## ■ Taxes

- Sales
- Property

# December Public Meetings & MDNS

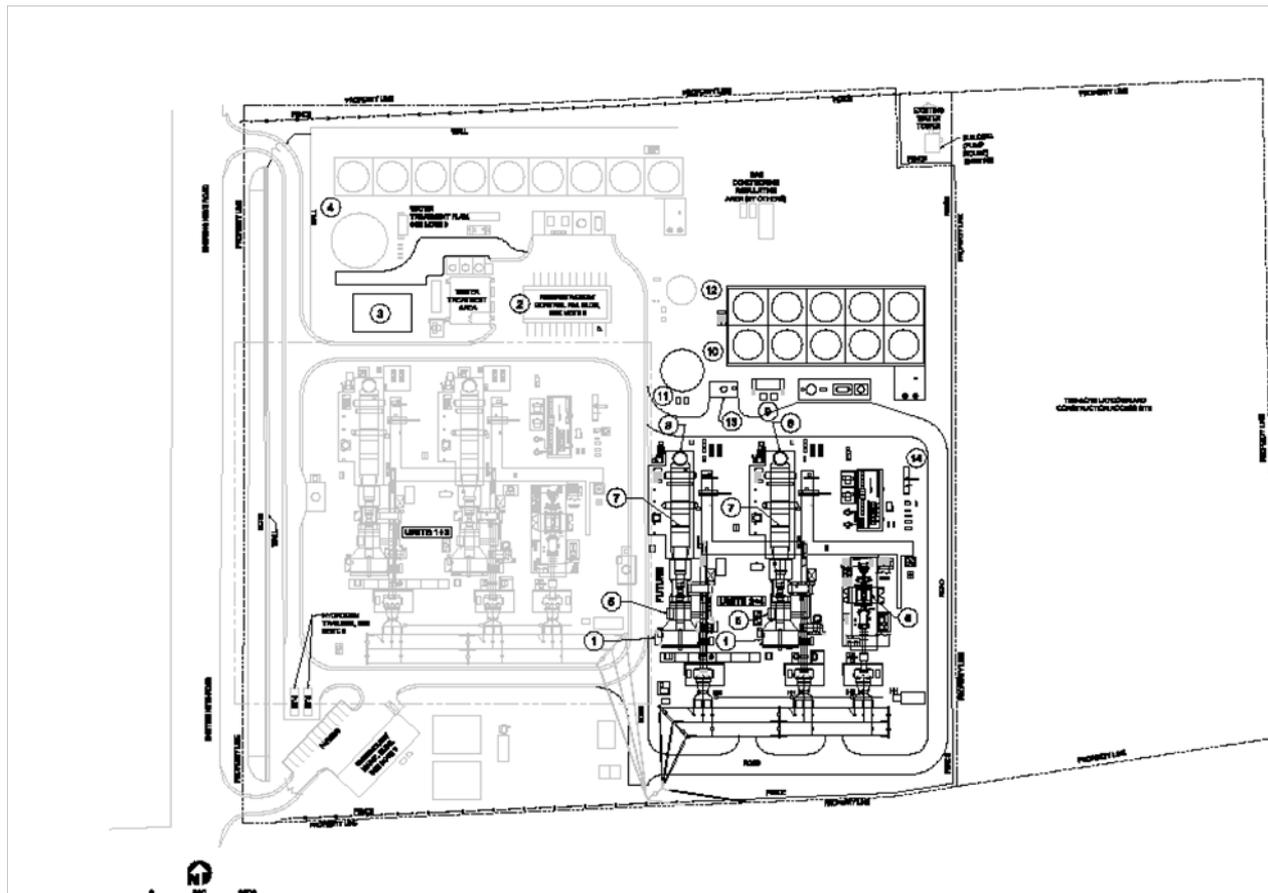
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Heard public comments => MDNS mitigation measures

- Land
- Traffic
- Noise
- Odor
- Light/Glare
- Need for plant

# Forested Land

- 10 acres east of site
- GHE agreed to not develop acreage, as part of MDNS
- Developed property will be used for laydown and construction



# Construction Traffic

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- Prior to construction of existing facility, improvements to SR 12 & Keys Rd were made
  - Dedicated turn lanes and flared approach
- Traffic mitigation plan implemented for existing facility
- Key point - encouraged Wakefield/Lambert route instead of SR 12 & Keys Rd.
  - Utilized for expansion

# Noise

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- ❑ New call process
- ❑ Neighbor meetings/Tour of facility
- ❑ Proposed MDNS Mitigations
  - Confirm compliance for all units after expansion
  - Design features silencers, enclosures, and sound walls
  - Improve noise compliant system – call logs & responses
  - Studies to show if additional mitigation measures needed
  - With construction of Units 3&4, identify reasonable, cost-effective measures to further reduce noise levels
- ❑ Expert Panel on Noise

# Odor

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- ❑ Expert Panel on Air Quality
- ❑ Public expressed chlorine odor
- ❑ Plant investigated
  - Review of use of materials
  - Property
- ❑ Identified cooling tower as source
- ❑ Changed chemistry to alleviate odor
- ❑ Expansion utilize these changes

# Light and Glare

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- ❑ After December public meetings, GHE investigated light reduction opportunities
- ❑ GHE implemented light reduction plan
  - Turn off all lighting that is not needed for safety/security
  - Install light shielding to redirect light downward
- ❑ Expansion will use light reduction and shielding plan
- ❑ Mitigation measures part of MDNS

# Need for Project

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- ❑ Demand in the Pacific Northwest
  - Future growing demand for energy in NW and US
  - Natural gas will serve majority need versus coal, nuclear
  
- ❑ Integration of renewables
  - Higher levels of wind/solar
  - Variable/Intermittent

# Summary

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- ❑ Clean, Efficient Power
- ❑ Significant Local Economic Benefits
- ❑ Mitigated Impacts

=> Request SCA Amendment

# Questions?

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