



**Grand Traverse Band of Ottawa and Chippewa Indians**

**US DOE Office of Efficiency and Renewable Energy  
Tribal Energy Program**

**Renewable Energy & Energy Efficiency Feasibility Study**

**October 19, 2005**

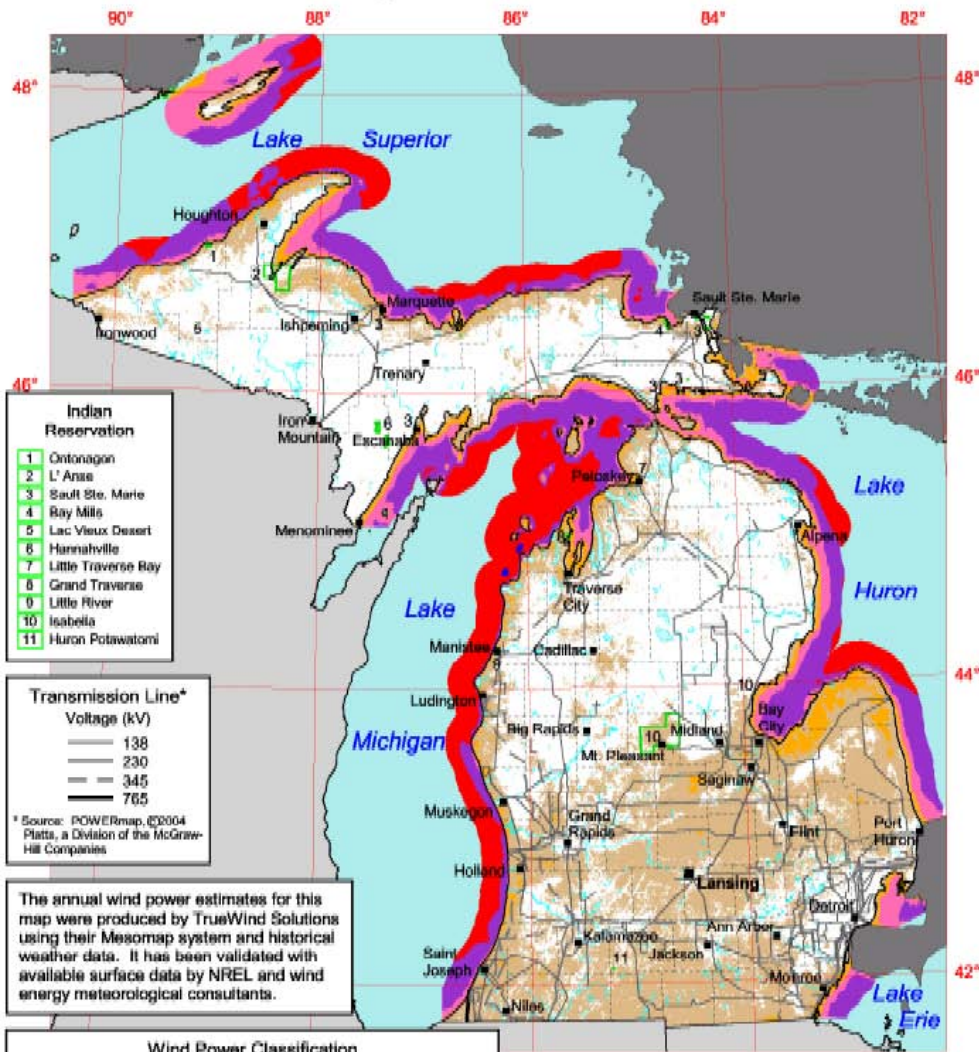
# Project Participants

- Project Director – Andy Knott
- Principal Investigator – Steve Smiley
- Project Advisor – Bob Gough

# Grand Traverse Band

- 3,982 Members
- 2,370 Acres – Checkerboard
- Six-County Service Area
- EDC: 2 Casinos, Resort (424 Rooms), Gas Station, etc.
- Gov't: Administration, Housing, Medicine Lodge, Strong Heart Center, Day Care, etc.

# Michigan - 50 m Wind Power



**Wind Power Classification**

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m <sup>2</sup>	Wind Speed <sup>a</sup> at 50 m m/s	Wind Speed <sup>a</sup> at 50 m mph
1	Poor	0 - 200	0.0 - 5.6	0.0 - 12.5
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	> 800	> 8.8	> 19.7

<sup>a</sup> Wind speeds are based on a Weibull k of 2.0.

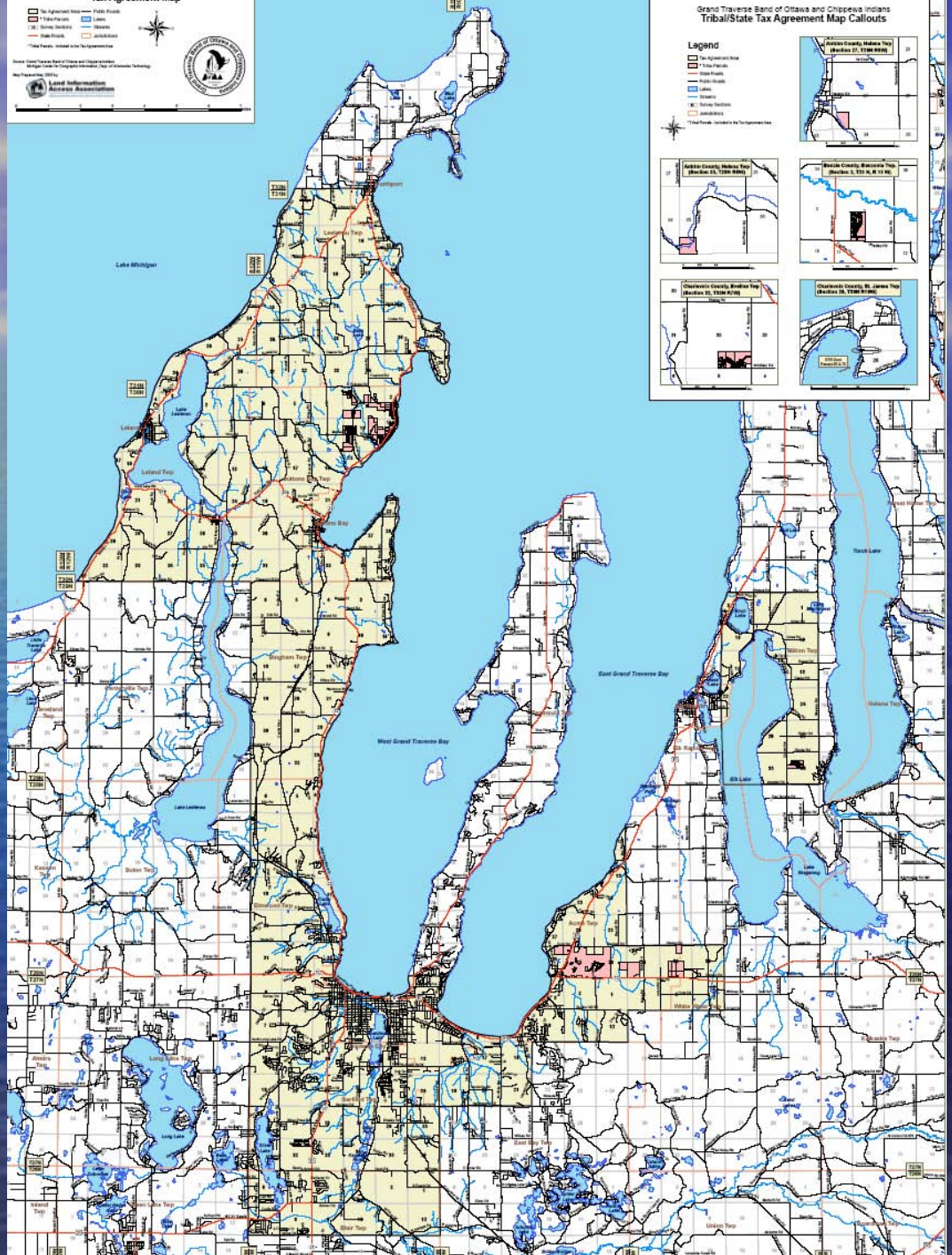


U.S. Department of Energy  
National Renewable Energy Laboratory

Grand Traverse Band of Ottawa and Chippewa Indians  
**Tax Agreement Map**

■ No Agreement Area    ■ Public Funds  
 ■ Tribal Property    ■ Lakes  
 ■ Other Services    ■ Waters  
 ■ State Funds    ■ Land/Structure  
 ■ Other Funds    ■ Land/Structure  
 \*Other Funds: Indicated with Topographic Lines

Source: Grand Traverse Band of Ottawa and Chippewa Indians  
 Michigan Department of Community Development, Agency for Economic Development  
 Map Publication: 2019



Grand Traverse Band of Ottawa and Chippewa Indians  
**Tribal/State Tax Agreement Map Callouts**

**Legend**

- No Agreement Area
- Tribal Property
- Other Services
- State Funds
- Other Funds
- Lakes
- Waters
- Land/Structure
- Land/Structure

\*Other Funds: Indicated with Topographic Lines



Grand Traverse Resort and Spa



Turtle Creek Casino



Leelanau Sands Casino



**Strong Heart Center**



# GTB Energy Vision

- The Tribal Council of the Grand Traverse Band of Ottawa and Chippewa Indians envisions a diverse energy future that includes renewable sources such as wind, solar and biomass sources as well as conventional sources of energy such as electricity and natural gas. This vision emphasizes diversity in order to improve environmental quality while also maximizing economic benefits to the Tribe. (Adopted 1/26/05)

# Energy Plan

- Three Focus Areas:
- Energy Diversity
- Environmental Quality
- Economic Benefits

# Energy Diversity

- Goal: Increase Diversity of GTB's Energy Sources
- Reducing Energy Costs and Increasing Cost Certainty
- Set an example for both native and non-native communities.

# Environmental Quality

- Goal: Reduce Environmental Impacts of GTB's Energy Use
- Reduce mercury emissions
- Reduce CO2 emissions
- Reduce risks of nuclear power

# Economic Benefits

- Goal: Increase Economic Benefits of Energy Use to GTB
- Energy efficiency most cost-effective
- Wind, solar, biomass can also help reduce costs
- Job creation

# Action Plan

- Conduct energy diversification feasibility study
- Financing plan
- Public education campaign
- Distributed renewable power study

# Feasibility Study Project Activities

- Energy Load Assessments
- Review Energy Efficiency Potential
- Power Market Assessment
- Site Specific Resource Monitoring
- Transmission and Interconnection Studies
- Technology Analysis
- Economic Analysis

# Feasibility Study Project Activities (cont)

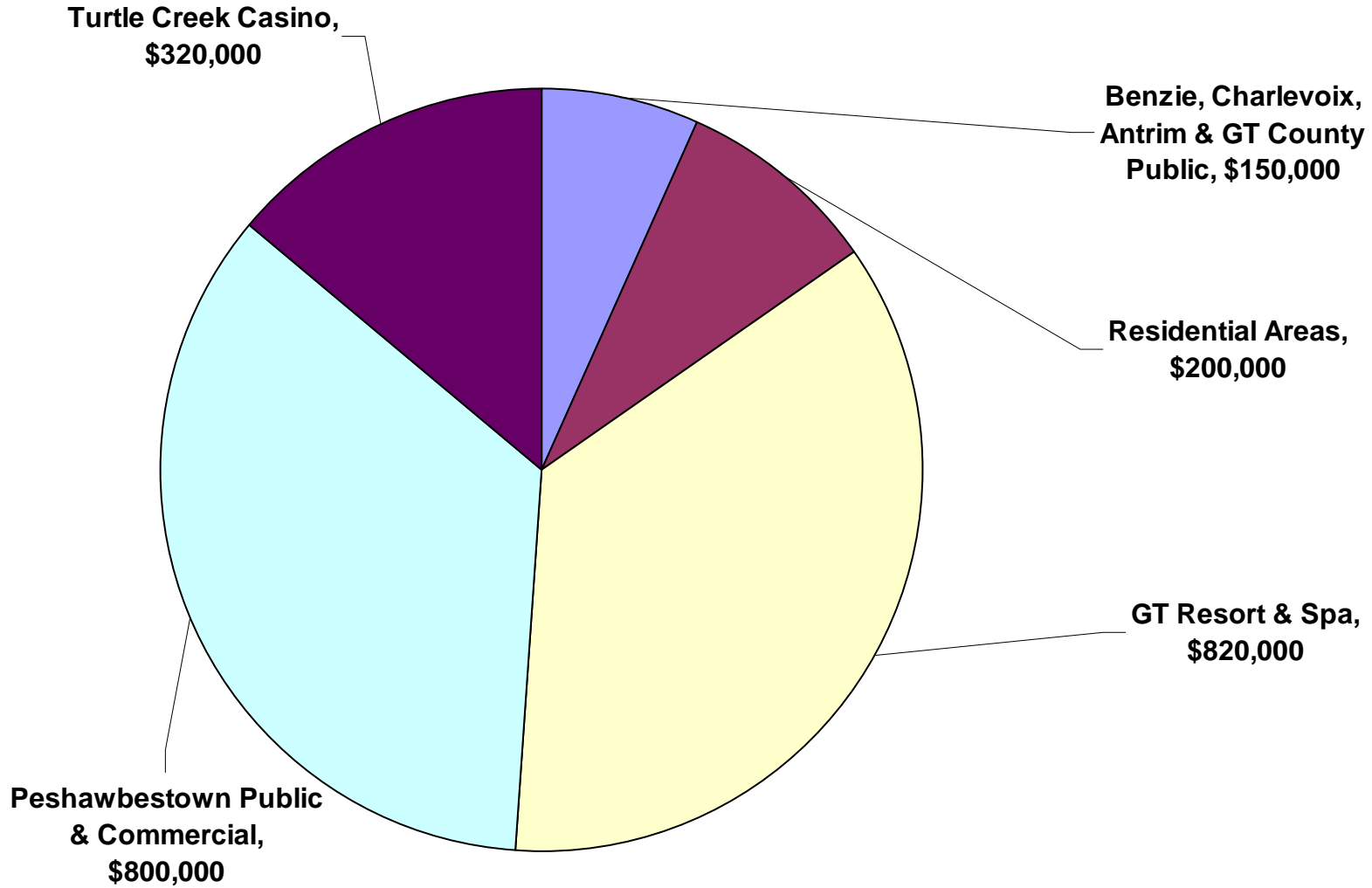
- Environmental Evaluation
- Benefit Assessment
- Preliminary System Designs
- Community Awareness/Support Activities
- Long-Term O&M Plan
- Business and Organizational Planning
- Financing Plan



# Past Energy Activities

- Comprehensive Energy Profile & analysis
  - \$2.4 million annual energy costs
  - 4 megawatt (mW) electric peak
- Bulk “transportation” natural gas
- “Primary” electric distribution system
- Small wind and solar PV demo
- Large wind project development tasks
- Draft energy utility code

# GTB Energy Cost Breakdown 2005



# Electric and heat utility politics & economics

- One natural gas utility
- Three competing electric utilities
  - Investor owned utility
  - Rural cooperative electric utility
  - Municipal, community owned utility



Thank you!