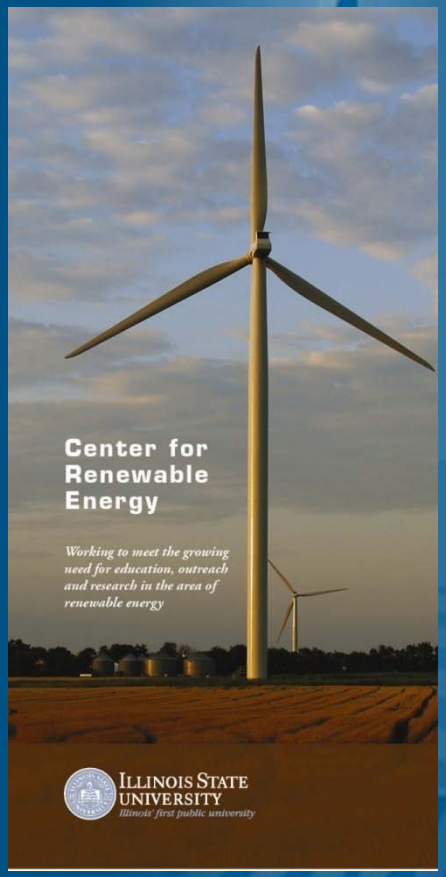
Economic Impact of Wind Energy in Illinois

David G. Loomis, Ph.D.
Professor of Economics
Illinois State University

WINDPOWER 2012 Atlanta, GA
June 6, 2012

Center for Renewable Energy
Illinois State University

- ...works to meet the growing need for education, outreach and research in the area of renewable energy.
- Three major functional areas:
  - to enhance the renewable energy major at Illinois State University;
  - to serve the Illinois renewable energy community by providing information to the public;
  - to encourage applied research concerning renewable energy at Illinois State University and through collaborations with other universities.



IL Wind Working Group

The IWWG is an organization whose purposes are to communicate wind opportunities honestly and objectively, to interact with various stakeholders at the local, state, regional and national levels, and to promote economic development of wind energy in the state of Illinois.

IL Wind Working Group

- Part of the U. S. Department of Energy's Wind Powering America Program
- One of 34 state wind working groups across the country
- Partially funded by a grant from the U. S. Department of Energy
- Comprised of over 150 stakeholders in Illinois wind energy
- Hosted by Illinois State University

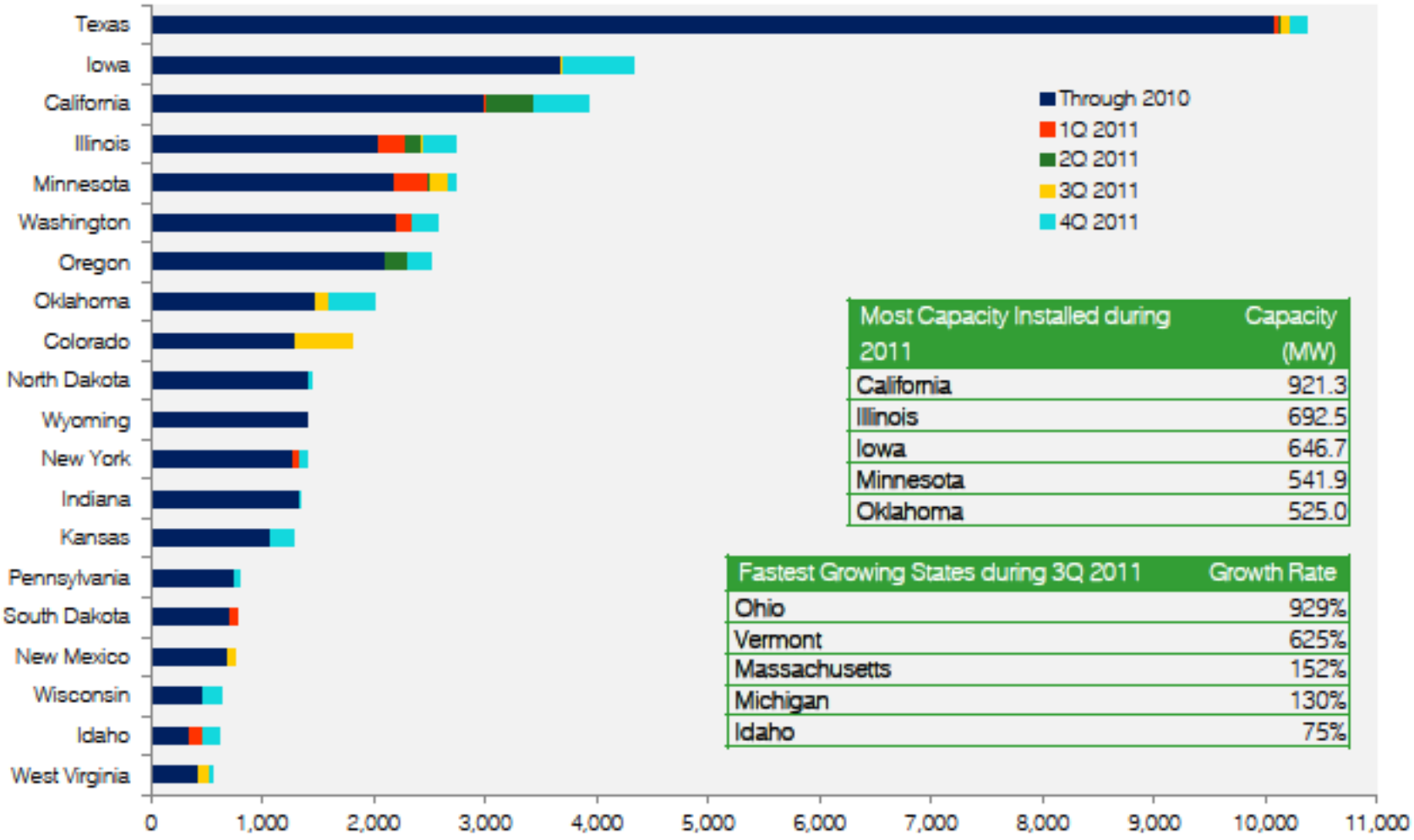
ILLINOIS
WINDWORKING
GROUP

Illinois Wind Working Group

- Website:
  - www.renewableenergy.ilstu.edu/wind/
- Annual Wind Conference, July 17-18, 2012, Normal, IL

ILLINOIS IN NATIONAL PERSPECTIVE

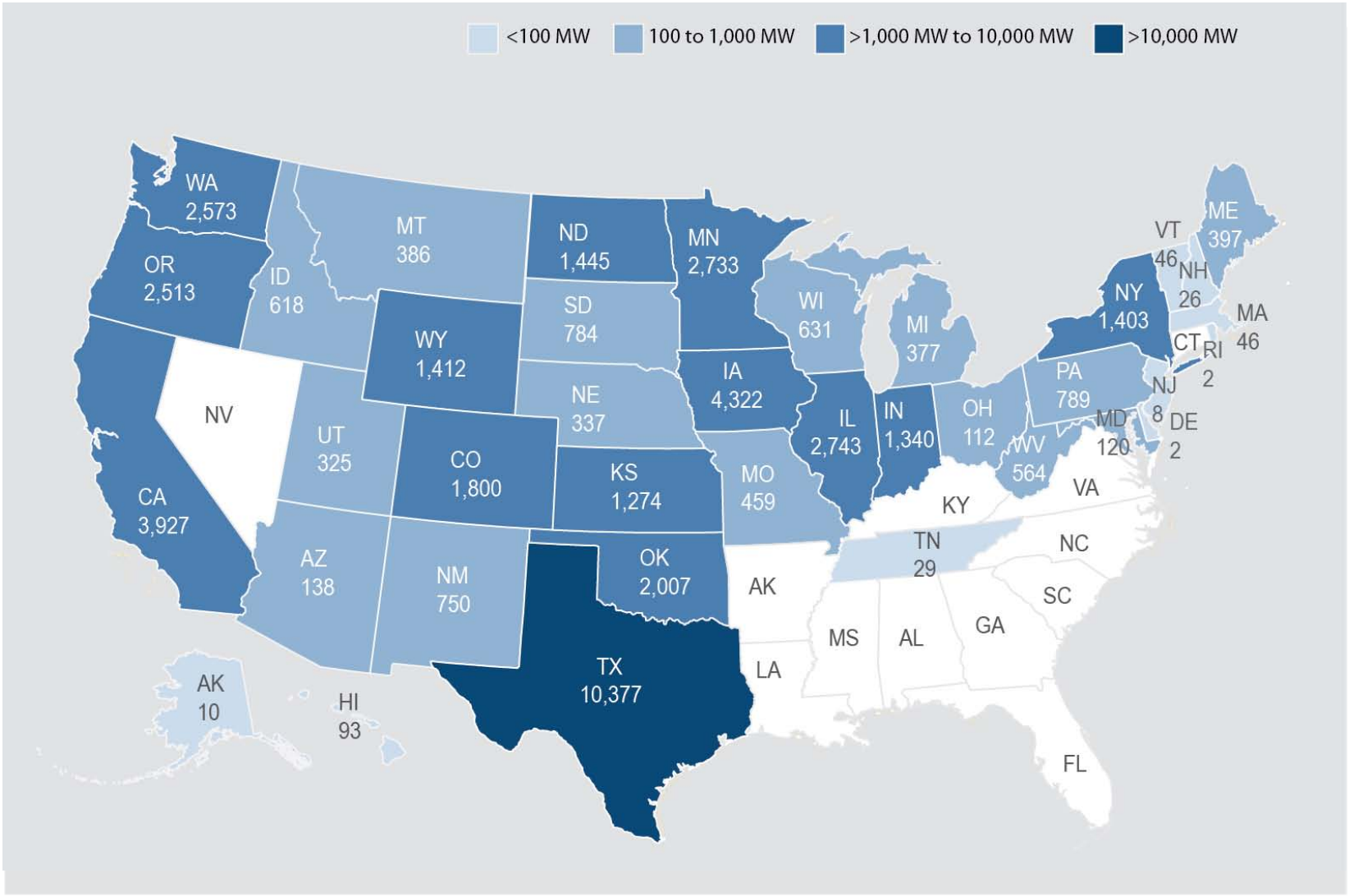
Wind Power Capacity Installations, Top 20 States



Most Capacity Installed during 2011	Capacity (MW)
California	921.3
Illinois	692.5
Iowa	646.7
Minnesota	541.9
Oklahoma	525.0

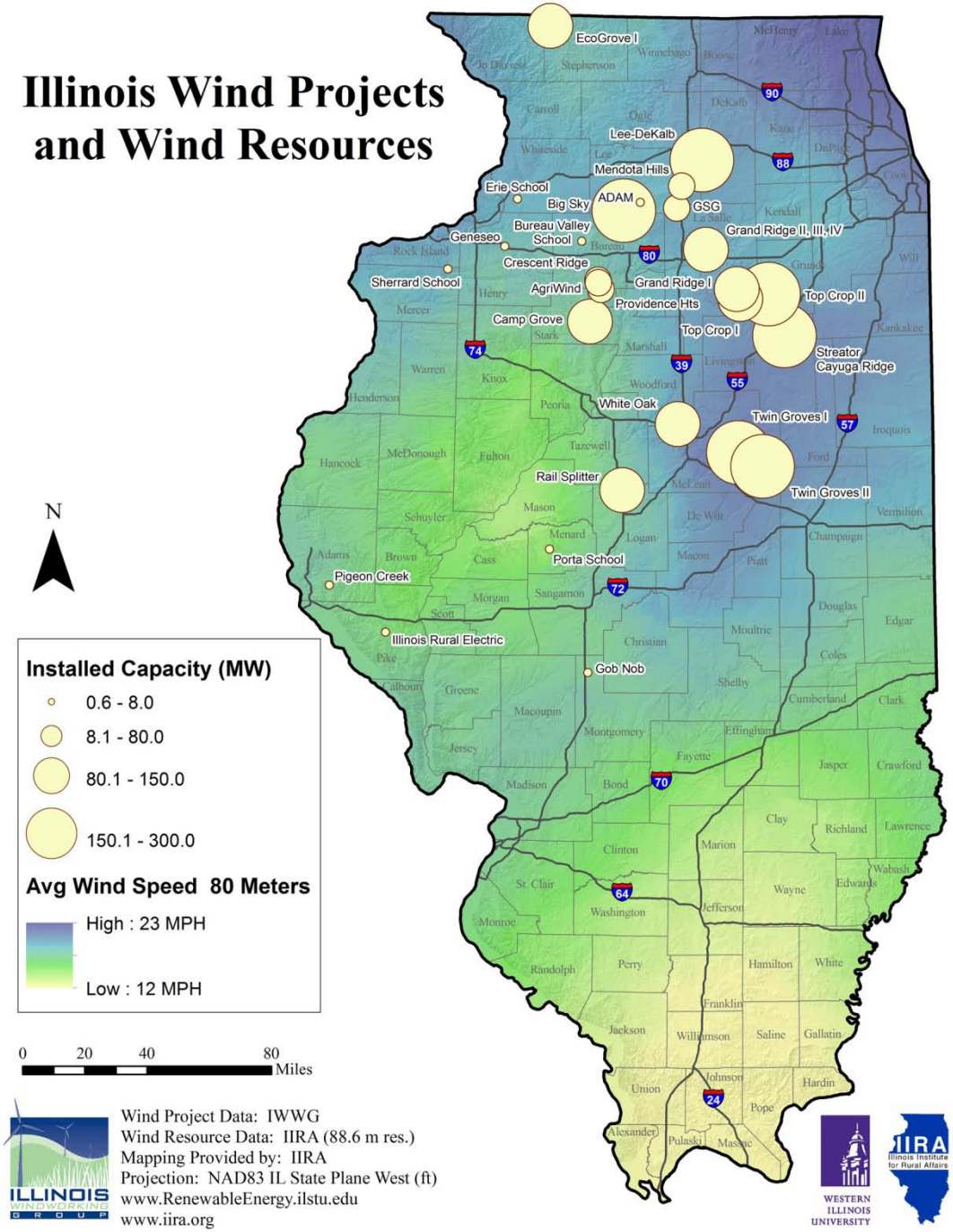
Fastest Growing States during 3Q 2011	Growth Rate
Ohio	929%
Vermont	625%
Massachusetts	152%
Michigan	130%
Idaho	75%

U.S. Wind Power Installations by State



WIND FARMS IN ILLINOIS

Illinois Wind Projects and Wind Resources



Wind Project Data: IWWG
Wind Resource Data: IIRA (88.6 m res.)
Mapping Provided by: IIRA
Projection: NAD83 IL State Plane West (ft)
www.RenewableEnergy.ilstu.edu
www.iira.org

Wind Farms by County (MW)

County (IL)	Completed	Construction
McLean	396	150
LaSalle	312	
Ford/Iroquois	300.8	
Livingston	300	
DeKalb	199.5	
Lee	161	106.5
Bureau	191.5	315
Stephenson	100.6	
Marshall	90	
Stark	60	
Tazewell	57	
Logan	43.5	
Henry		280
Chicago City*	0.75	

Permitted Projects by County

County (IL)	Permitted
Henry	704
McLean	700
Livingston	551.5
Woodford	150
Ford	145
Kankakee	131.5
Lee	122.5
Stephenson	80
Iroquois	70.5
Marshall	40
Warren	20

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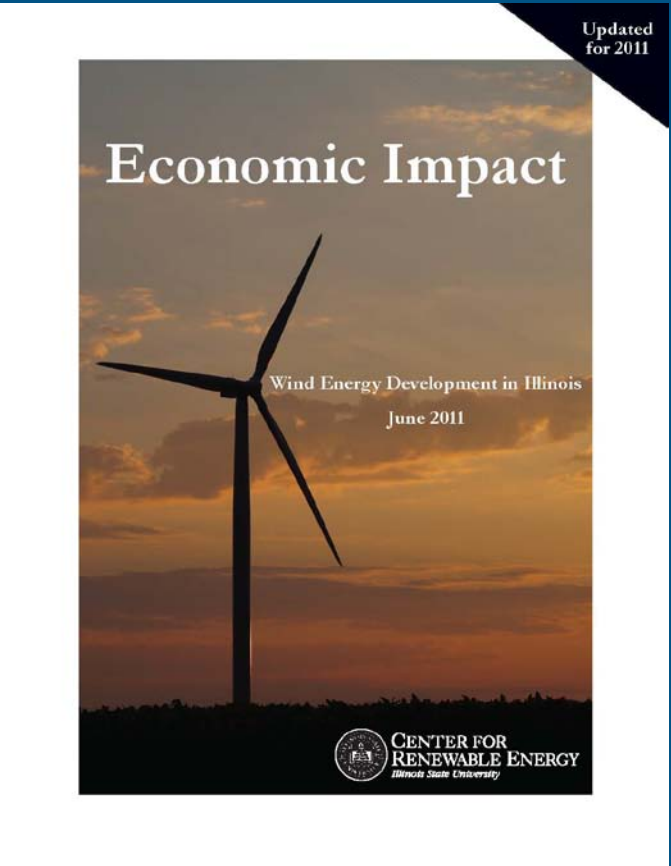
Applied Research 2011/2012

- Illinois RPS: Context, Structure and History of the Policy Loomis/Pagan
- Optimal Wind Energy Portfolios in Illinois – Chupp/Hickey/Chupp
- Impact of Wind Farms on Property Values Loomis/Carter
- Wind Farm Implications for School Revenue - Aldeman/Loomis/Willis
- Economic Impact of Wind Energy in Illinois Loomis/Carter

Economic Impact 2011



- Limited to projects > 50MW
- 17 projects total 2,422.01 MW
- Jobs and Economic Development Impacts (JEDI)

Projects Studied

Table 1.—Illinois Wind Farm Projects Larger than 50 MW

Wind Farm	Location (County)	Capacity (MW)
Streator Cayuga Ridge South Wind Farm	Livingston	300.00
Big Sky Wind Farm	Bureau and Lee	239.40
Lee-Dekalb Wind Energy Center	Dekalb and Lee	217.50
Top Crop Wind Farm Phase II	Grundy	198.00
Twin Groves Wind Farm Phase I	McLean	198.00
Twin Groves Wind Farm Phase II	McLean	198.00
White Oak Wind Farm	McLean	150.00
Camp Grove Wind Farm	Marshall and Stark	150.00
Grand Ridge Energy Center Phase II, III, and IV	LaSalle	111.00
EcoGrove Wind Farm Phase I	Stephenson	100.50
Rail Splitter Wind Farm	Logan and Tazewell	100.50
Top Crop Wind Farm Phase I	LaSalle	102.00
Grand Ridge Wind Farm Phase I	LaSalle	99.00
GSG Wind Farm	Lee and LaSalle	80.00
Providence Heights Wind Farm	Bureau	72.00
Crescent Ridge Wind Farm	Bureau	54.45
Mendota Hills Wind Farm	Lee	51.66

ANALYSIS

JEDI

- Spreadsheet-based model based on IMPLAN software developed by NREL
- Provides default values for turbine prices, project costs and percentage sourced within the state
- Key component is accurate project-level data

Project Data

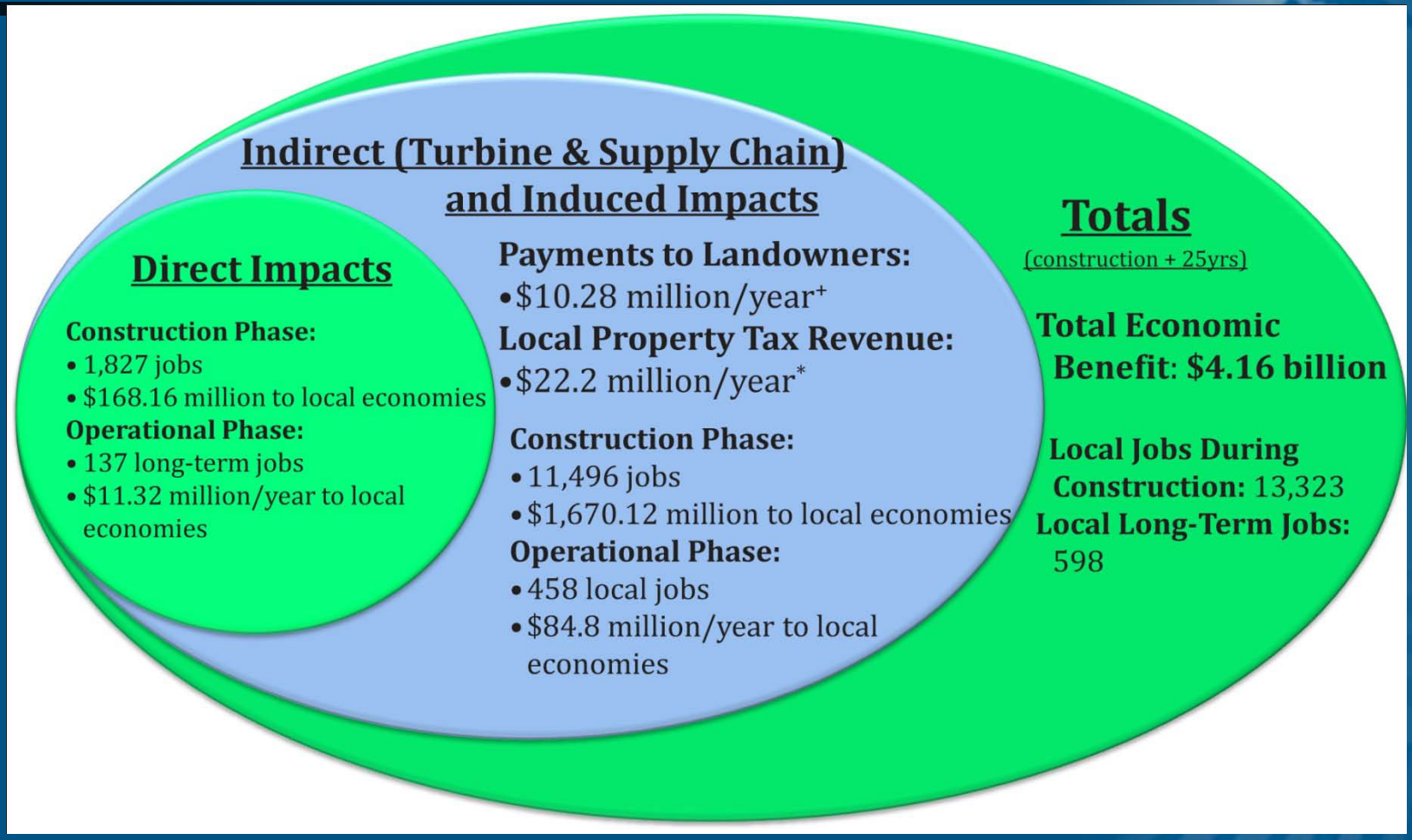
- Wrote draft copy of report so that developers could see how their information was being used
- Provided customized project cost spreadsheet for each project, asked for modifications, phone calls
- Much better response rate

Project Data 2010

- Most developers use the report with landowners, county boards and zoning boards, and policymakers.
- All developers provided data promptly (2 with an NDA)

STATE RESULTS

2011 State Results



COUNTY-LEVEL IMPACTS

County-Level Results

- JEDI can also be used to provide county-level analysis
- Need to buy IMPLAN to input county multipliers

County Jobs Impacts

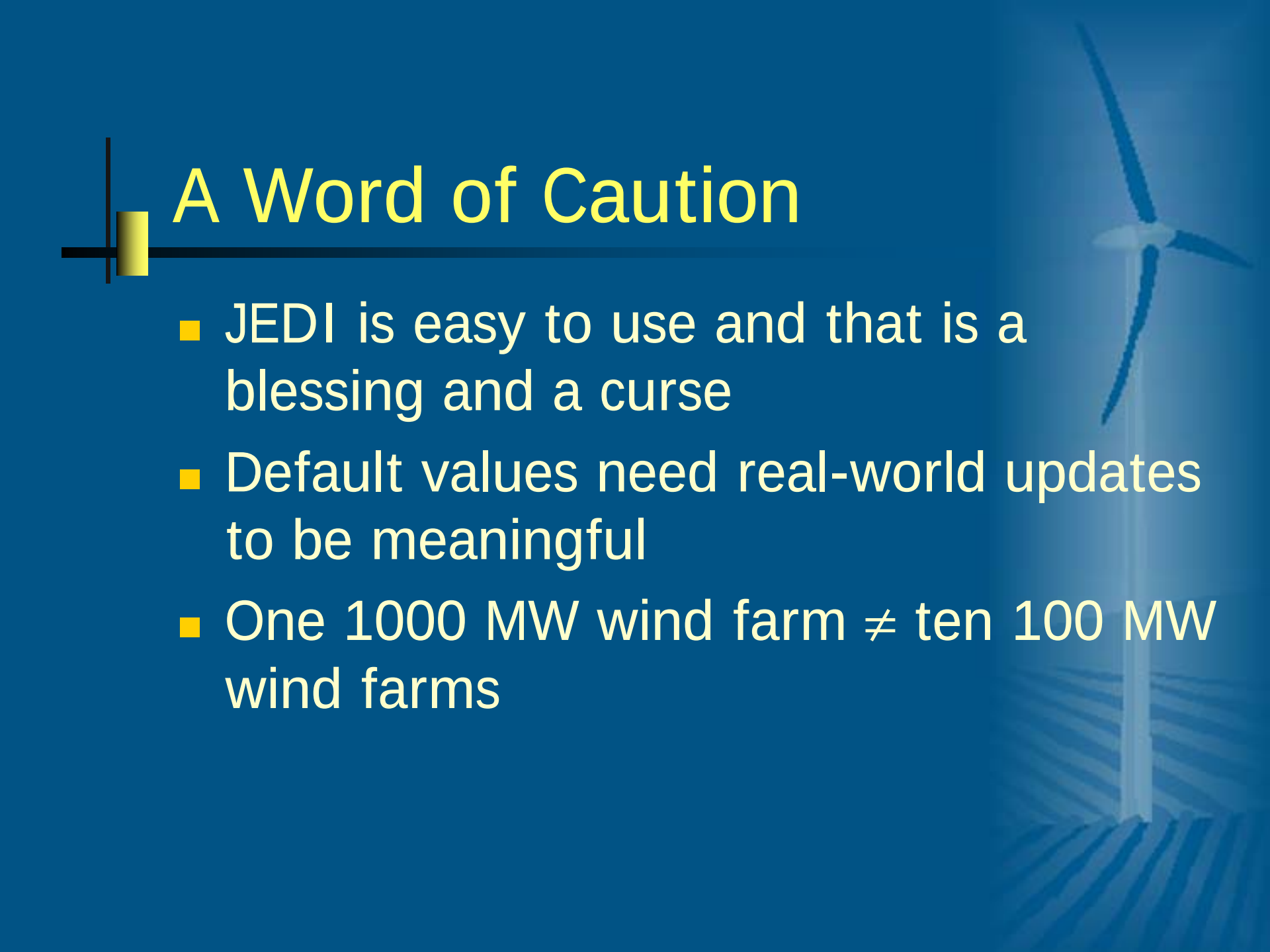
	County 1	County 2	State of Illinois
Construction			
Project Development and Onsite Labor Impacts	18	32	134
Turbine and Supply Chain Impacts	32	104	920
Induced Impacts	13	33	323
New Local Jobs during Construction	63	169	1,377
Operations			
Onsite Labor Impacts	3	8	10
Local Revenue and Supply Chain Impacts	13	16	25
Induced Impacts	12	10	17
New Local Long Term Jobs	28	34	52

Total Earnings Impact

	County 1	County 2	State of Illinois
Construction			
Project Development and Onsite Earnings Impacts	$1,303,729	$2,265,567	$10,408,238
Turbine and Supply Chain Impacts	$1,675,686	$5,531,674	$58,415,673
Induced Impacts	$493,757	$1,128.899	$16,838,878
New Local Earnings during Construction	$3,473,172	$8,926,140	$85,662,789
Operations			
Onsite Labor Impacts	$254,697	$568,833	$735,235
Local Revenue and Supply Chain Impacts	$529,484	$600,494	$1,538,628
Induced Impacts	$455,271	$354,456	$885,175
New Local Long Term Earnings	$1,239,452	$1,523,783	$3,159,038

A Word of Caution

- JEDI is easy to use and that is a blessing and a curse
- Default values need real-world updates to be meaningful
- One 1000 MW wind farm ≠ ten 100 MW wind farms



For More Information, Contact

David G. Loomis
Center for Renewable Energy
Illinois State University
Campus Box 4200
Normal, IL 61790
309-438-7919
renewableenergy@ilstu.edu