

# Renewable Energy: An Economic Development Driver

6<sup>th</sup> Annual Nebraska Wind Conference  
November 13-15, 2013

# Public Power & the State Leg

- Public Power is a creation of the Legislature
- The Nebraska Legislature, through state statutes, ultimately directs Nebraska's public power industry
- Public Power has the opportunity & responsibility to take into account its economic development responsibilities when creating energy

# Public Power & Economic Development

## Section 70-625.01

- The Legislature finds and declares that:
- (1) There are rural areas in the state which are experiencing declines in economic activity and the outmigration of rural residents which is eroding the tax base of those rural areas and undermining the ability of the state and local governments to provide essential public services;
- (2) Rural economic development efforts can increase the productivity of economic resources, create and enhance employment opportunities, increase the level of income and quality of life for rural residents, assist in slowing or reversing the outmigration of rural residents, and help maintain essential public services to the advantage not only of those rural areas but also of the state as a whole and the electric utilities serving those rural areas;

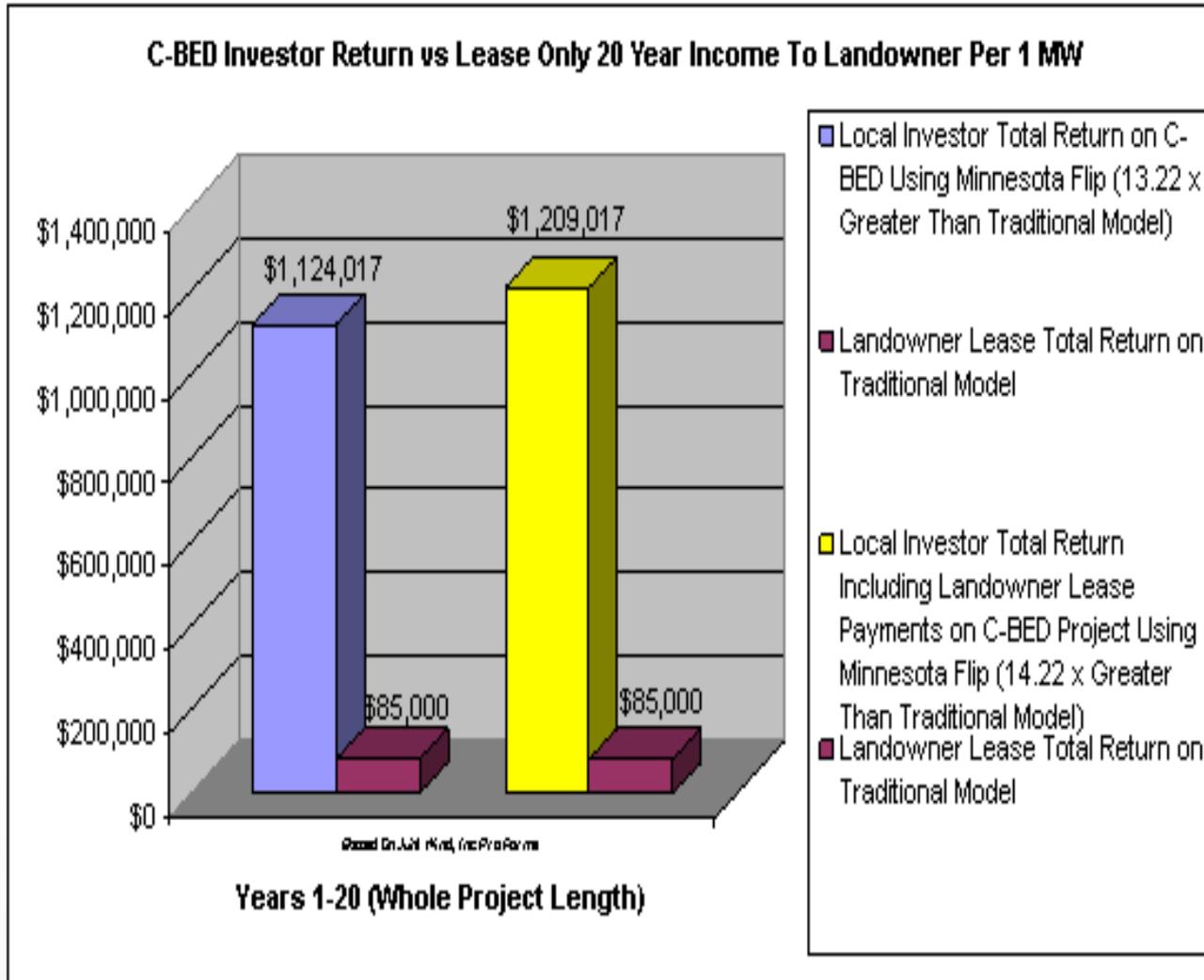
# Statute Continued...

- (3) Funds may be available from the United States Department of Agriculture or other federal agencies to suppliers of electricity in rural areas to promote economic development and job creation projects;
- (4) It is the policy of this state to promote economic development and job creation projects in rural areas through the use of federal funds and other funds which may be available as authorized in subsection (3) of section 70-625;
- (5) Public power districts operating in rural areas of this state are uniquely situated through their boards of directors to know and understand the need to promote economic development and job creation projects in their service areas; and

# Statute...

- (6) Involvement by publicly owned electric utilities operating in rural areas in such economic development activities serves a public purpose and it is the public policy of this state to allow public power districts to promote economic development and job creation projects in rural areas as provided in subsection (3) of section 70-625.

# NE Farmers Union 2007 C-BED Analysis



# U.S.DOE/NREL: Wind Energy & Economic Development in NE June 2009

<b><u>Direct Impacts*</u></b>	<b>1000 MW Low</b>	<b>1000 MW High</b>	<b>7,800 MW Low</b>	<b>7,800 MW High</b>
<b>Construction Period Employment (short-term jobs)</b>	<b>1,228</b>	<b>2,177</b>	<b>10,301</b>	<b>17,795</b>
<b>Operations period employment (long-term jobs)</b>	<b>141</b>	<b>290</b>	<b>1,166</b>	<b>2,269</b>
<b>Construction Generated Economic Output (millions)</b>	<b>\$150</b>	<b>\$308</b>	<b>\$1,700</b>	<b>\$3,200</b>
<b>Operations Generated Economic Output (millions)</b>	<b>\$18</b>	<b>\$33</b>	<b>\$144</b>	<b>\$255</b>
<b>Average Property Tax Revenue (million \$/yr)**</b>	<b>\$3.3</b>	<b>\$3.3</b>	<b>\$14</b>	<b>\$14</b>
<b><u>Total Impacts (Direct, Indirect, and Induced)</u></b>				
<b>Construction Period Employment (short-term jobs)</b>	<b>2,316</b>	<b>4,199</b>	<b>20,626</b>	<b>36,508</b>
<b>Operations Period Employment (long-term jobs)</b>	<b>264</b>	<b>515</b>	<b>2,171</b>	<b>4,038</b>
<b>Average Annual Employment Impacts (jobs supported on average over the lifetime of the facility)**</b>	<b>345</b>	<b>659</b>	<b>1,600</b>	<b>2,925</b>
<b>Lifetime Equity Payments (millions)</b>	<b>\$122</b>	<b>\$979</b>	<b>\$803</b>	<b>\$6,423</b>
<b>Lifetime Land Lease Impacts (millions)</b>	<b>\$70</b>	<b>\$82</b>	<b>\$547</b>	<b>\$641</b>
<b>Lifetime Economic Output (millions)</b>	<b>\$868</b>	<b>\$1,640</b>	<b>\$7,800</b>	<b>\$14,100</b>

\*Low results represent the traditional development low scenario. High results represent the C-BED high scenario.

\*\*Average annual impacts for 7,800 MW assume a 20-year construction period and 20 years of operations for a total lifetime impact spread over 40 years. Average annual impacts for 1,000 MW assume a 2-year construction period and 20 years of operations for a total impact spread over 22 years.

# What would wind mean for Burt County?

<b>Burt County Wind (12MW) Projected In-State Economic Benefits</b>	
Construction Payments to NE based Contractors	\$5,100,000
Debt Service & Interest Payments to NE based Bank*	\$17,900,000
In-state Tax Equity Investor Return*	\$10,125,000
In-state Sponsor Equity Investor Return*	\$4,500,000
Land Lease Payments*	\$720,000
Property Tax Payments*	\$750,000
Operations & Maintenance*	\$800,000
Potential % of Electricity Revenues Staying In-state*	65%
<b>Total Local Return*</b>	<b>\$39,895,000</b>

Typical wind farms return 2-10% of Electricity Revenues In-State

*\*Over 20-year life of the project*



# Economic Impacts

Ken

Projects listed in order of MW

direct indirect induced jobs



Project Name	Installed Capacity MW	Jobs Construction Period 1 Year Jobs/MW	Jobs Operating Period 20 Years Jobs/MW	Jobs Annual Average Operating Period Jobs Total	Total Local Earnings, Payments & Income for Life of Project Million \$	Local Earnings, Payments & Income for Life of Project \$/MWh	Average Annual Local Earnings, Payments & Income for Operating Period Million \$
Burt County Wind East & West *	12.0	7.15	0.36	4.4	10.1	11.5320	0.3471
Waywind	45.0	6.10	0.19	8.6	22.8	7.4270	0.6534
Hallam	50.6	6.00	0.19	9.4	25.2	7.1954	0.7230
Madison Wind Project	50.6	6.00	0.19	9.4	25.2	6.4453	0.7230
Prairie Breeze (Expansion)	73.5	5.76	0.17	12.9	34.6	5.9721	0.9999
Hallam	73.6	5.75	0.17	12.9	34.8	6.8410	1.0064
Table Top Wind Farm	80.0	5.70	0.17	13.9	37.4	6.0432	1.0846
Verdigre Wind Farm	81.5	5.69	0.17	14.2	38.1	6.0894	1.1034
Cottonwood	88.4	5.64	0.17	15.2	40.8	5.1710	1.1856
Harbine/Big Blue	98.9	5.57	0.17	16.9	45.1	6.5889	1.3150
Waywind	120.0	5.34	0.17	20.1	53.3	6.6088	1.5713
Hallam	124.2	5.33	0.17	20.7	55.0	6.4110	1.6230
Grand Prairie	166.0	5.28	0.16	27.0	72.3	6.2743	2.1290
Table Top Wind Farm	230.0	5.22	0.16	36.2	98.1	5.5095	2.8779
Grand Prairie	234.0	5.22	0.16	36.7	99.6	6.1861	2.9175
Rattlesnake Creek	300.0	5.20	0.15	46.4	126.8	6.1443	3.7077
Table Top Wind Farm	300.0	5.20	0.15	46.4	126.8	5.4590	3.7077
Grand Prairie (aggregate)	400.0	5.20	0.15	61.9	169.1	6.1993	4.9455
<b>Capacity / Energy Weighted Average</b>		<b>5.38</b>	<b>0.16</b>			<b>6.1055</b>	

\*CBED Project

# How much does economic development cost you?

- \*Cost of **\$0.04 per month** to residential customers

\*This is for year 1. Savings from Burt County Project will be realized in later years as energy prices trend upwards.



# Power Lincoln Locally

- Focuses & surveys have shown community support for locally produced energy
- PLL is advocating for local energy development in the public power structure (LES)
- PLL has worked to better quantify the local economic development benefits from local energy production, primarily solar
- PLL's proposed solar program is a net economic gain for the Lincoln community



Size of solar program: **5 MW**

Small solar projects: 5 kW x 200 projects = 1 MW

Medium solar projects: 500 kW x 8 projects = 4 MW

Small solar assumptions: \$3.75 /W installed cost

Medium solar assumptions: \$3 /W installed cost

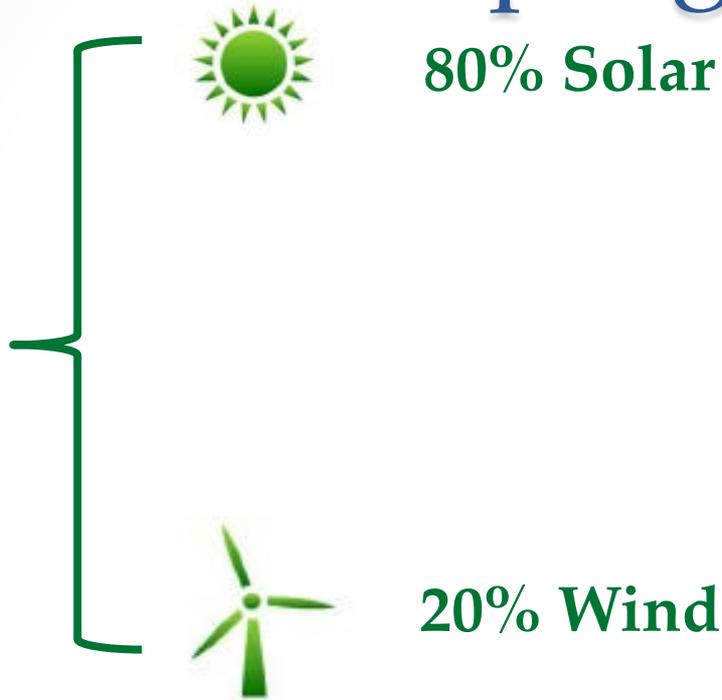
Other assumptions: 15.8% capacity factor, \$30/kw/yr operating cost, 2% property tax, with 10% depreciation annually.

**In-State Economic Benefits**  
(\$Millions)

1 Construction payments to contractors		In Year 1	Over 25 Years
Assumed % staying in-state:	55%		
Rationale: Equipment represents nearly half of initial cost, and it is assumed no PV equipment is manufactured in-state.			
		Small PV \$ 2,062,500	\$ 2,062,500
		Medium PV \$ 6,600,000	\$ 6,600,000
		<b>Total</b> \$ 8,662,500	<b>\$ 8,662,500</b>
2 Operations & maintenance payments		In Year 1	Over 25 Years
Assumed % staying in-state:	20%		
Rationale: Equipment represents the majority of O&M costs.			
		Small PV \$ 6,000	\$ 169,459
		Medium PV \$ 24,000	\$ 677,837
		<b>Total</b> \$ 30,000	<b>\$ 847,296</b>
3 Debt service payments to banks		In Year 1	Over 25 Years
Assumed % staying in-state:	100%		
Rationale: In-state banks could be used for all or most of the financing for CLEAN projects.			
		Small PV \$ 132,339	\$ 1,323,388
		Medium PV \$ 407,074	\$ 4,070,740
		<b>Total</b> \$ 539,413	<b>\$ 5,394,128</b>
4 Equity investor return		In Year 1	Over 25 Years
Assumed % staying in-state:	100%		
Rationale: Project ownership is assumed to be local, whether capital costs are paid for by developer or equity investors.			
		Small PV n/a	\$ 1,102,833
		Medium PV n/a	\$ 3,346,048
		<b>Total</b> n/a	<b>\$ 4,448,881</b>
5 Property tax revenues		In Year 1	Over 25 Years
Assumed % staying in-state:	100%		
Rationale: Property taxes are exclusively state and local.			
		Small PV \$ 75,938	\$ 417,656
		Medium PV \$ 243,000	\$ 1,336,500
		<b>Total</b> \$ 318,938	<b>\$ 1,754,156</b>
TOTAL		In Year 1	Over 25 Years
		Small PV \$ 214,276	\$ 5,075,836
		Medium PV \$ 674,074	\$ 16,031,125
		<b>Total</b> \$ 888,350	<b>\$ 21,106,961</b>

# Residential Rate Impact – 5 MW program

**Pilot**  
**\$2.30**  
per year  
(\$0.19/mo.)



**Total:**  
**5 MW**

\* THESE FIGURES ARE ILLUSTRATIVE AND ARE USED IN THIS STUDY TO DETERMINE ORDERS OF MAGNITUDE. THESE FIGURES COULD BE SUBJECT TO CHANGE FOLLOWING MORE IN-DEPTH ANALYSIS OF LOCAL SYSTEM INSTALLATION COSTS, COSTS OF CAPITAL, ETC.

# Estimated Cumulative Jobs and

## Economic Development Impacts by 2020



4 MW



	Jobs**	Earnings from Jobs	Total Economic Output
	137	\$3.9 M	\$15.5 M
	6	\$0.3 M	\$0.6 M
	143	\$4.2 M	\$16.2 M



1 MW



**Total**



ANALYSIS IS BASED ON THE NATIONAL RENEWABLE ENERGY LABORATORY'S (NREL) JOBS AND ECONOMIC DEVELOPMENT IMPACT (JEDI) TOOLS.

\* JEDI MODELS ASSESS CUMULATIVE IMPACTS THROUGH A TARGET YEAR. ACTUAL BENEFITS FROM OPERATIONS JOBS AND OUTPUT WOULD CONTINUE BEYOND 2020.

\*\* JOBS IS MEASURED IN JOB-YEARS WHICH REFERS TO FULL-TIME EQUIVALENT FOR 1 YEAR (I.E. 1 JOB-YEAR = 2080 HOURS OF EMPLOYMENT)

# Recent LES Survey said...

- *60.7% indicate at least some likelihood to participate when bills increase less than \$3 per month.*
  - *\$3.00 per month would yield 70megawatts of local energy!*
    - *(80% solar, 20% wind)*

# Looking at the Big Picture: The True Cost of Energy

- When deciding who & where we purchase our energy we should consider:
  - All \$
    - Today's price
    - Pricing trends 5, 10, 15, & 20 years into the future
    - Economic Development
      - In-State Tax Revenues
      - Local Ownership & Investment \$
      - Local debt servicing \$
      - Local Construction \$
    - Costs to keep fossil fuel burning plants in compliance with clean air standards
  - New Jobs
  - Environmental Effects
    - Water Quality
    - Water Usage
    - Air Quality
- LB567 (Haar) starts to address these issues

# The Good Life



- Nebraska is #3 in wind energy potential
- Nebraska is #9 is solar energy potential
- Ethanol created enormous economic development opportunities in Nebraska
- Wind & solar energy are now the low hanging fruit of economic development in Nebraska
- We need to develop our renewable energy resources in the most economically beneficial way
  - That means maximizing local investment & ownership
  - That means maximizing domestic content