Building Your Proforma

A Million Little Pieces

Community Wind Energy 2006

Expanding The Know-how - Expanding The Market

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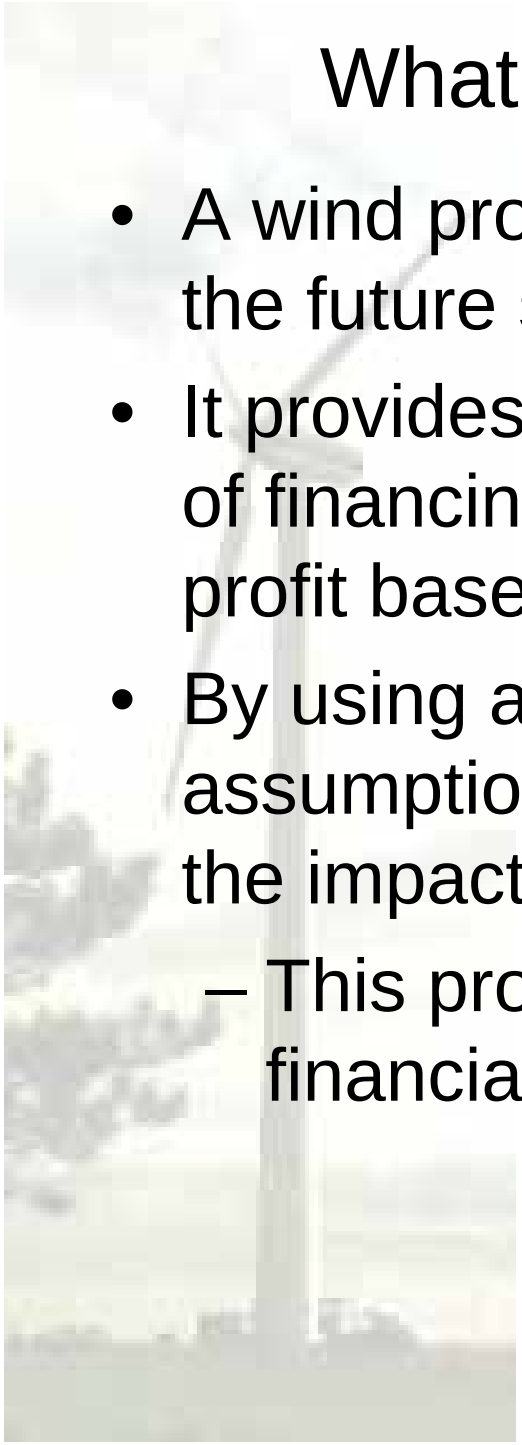
Topics I Will Discuss

- What a wind project proforma does
- The most significant factors in the proforma
- Example of an LLC Flip Structure proforma
- How changes in various factors affect the project economics
- Comparison to projects owned by non-profit entities using CREB financing.

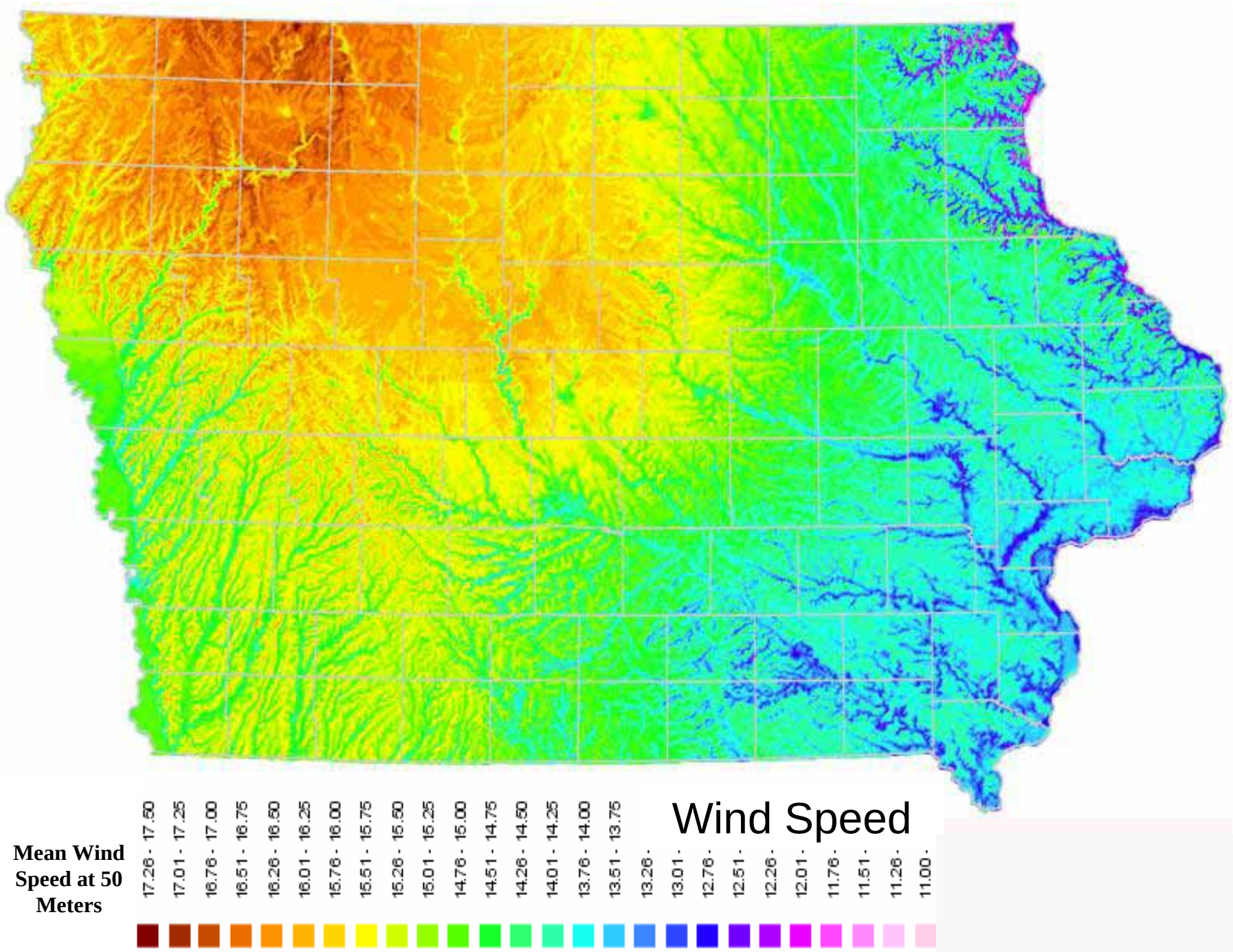
What is a Wind Project Proforma?

- A wind project proforma is a financial projection of the future shown in a financial format
- It provides a projection of the capital cost, sources of financing, revenue, the expenses, and the profit based on a specific set of assumptions
- By using a spreadsheet program like Excel, the assumptions can easily be changed to determine the impact on the profit.
  - This provides an easy tool to assess the financial impact of risks and uncertainties.



Factors Affecting Wind Project Economics

- The most important factor is the wind speed


Wind Speed
Mean Wind Speed at 50 Meters
17.26 - 17.50
17.01 - 17.25
16.76 - 17.00
16.51 - 16.75
16.26 - 16.50
16.01 - 16.25
15.76 - 16.00
15.51 - 15.75
15.26 - 15.50
15.01 - 15.25
14.76 - 15.00
14.51 - 14.75
14.26 - 14.50
14.01 - 14.25
13.76 - 14.00
13.51 - 13.75
13.26 -
13.01 -
12.76 -
12.51 -
12.26 -
12.01 -
11.76 -
11.51 -
11.26 -
11.00 -

Factors Affecting Wind Project Economics

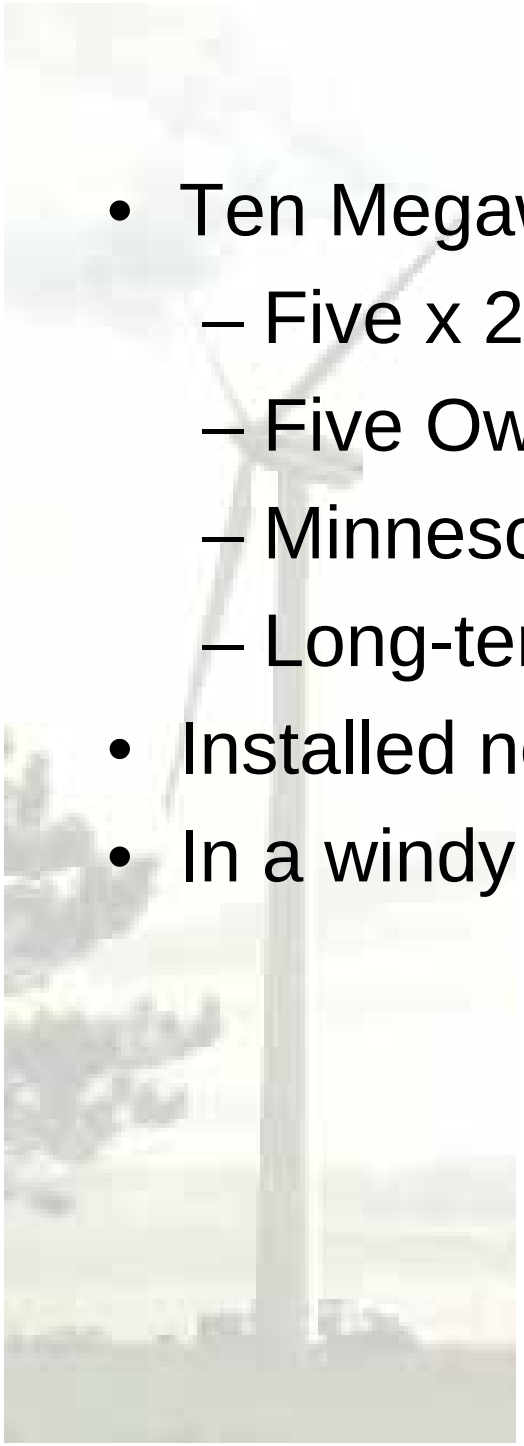
- The most important and influential factor is the wind speed
- The second most important factor is the Power Purchase Agreement ("PPA") selling price
  - In most areas of Iowa, the PPA price is about 3¢ per kWh levelized for a long term contract
  - Northwest Iowa Power Cooperative has been offering only about 2¢ per kWh
- The other factors affecting the project economics are:
  - State tax credits or incentives, wind turbine costs, interconnection cost, cost of financing, and grants.

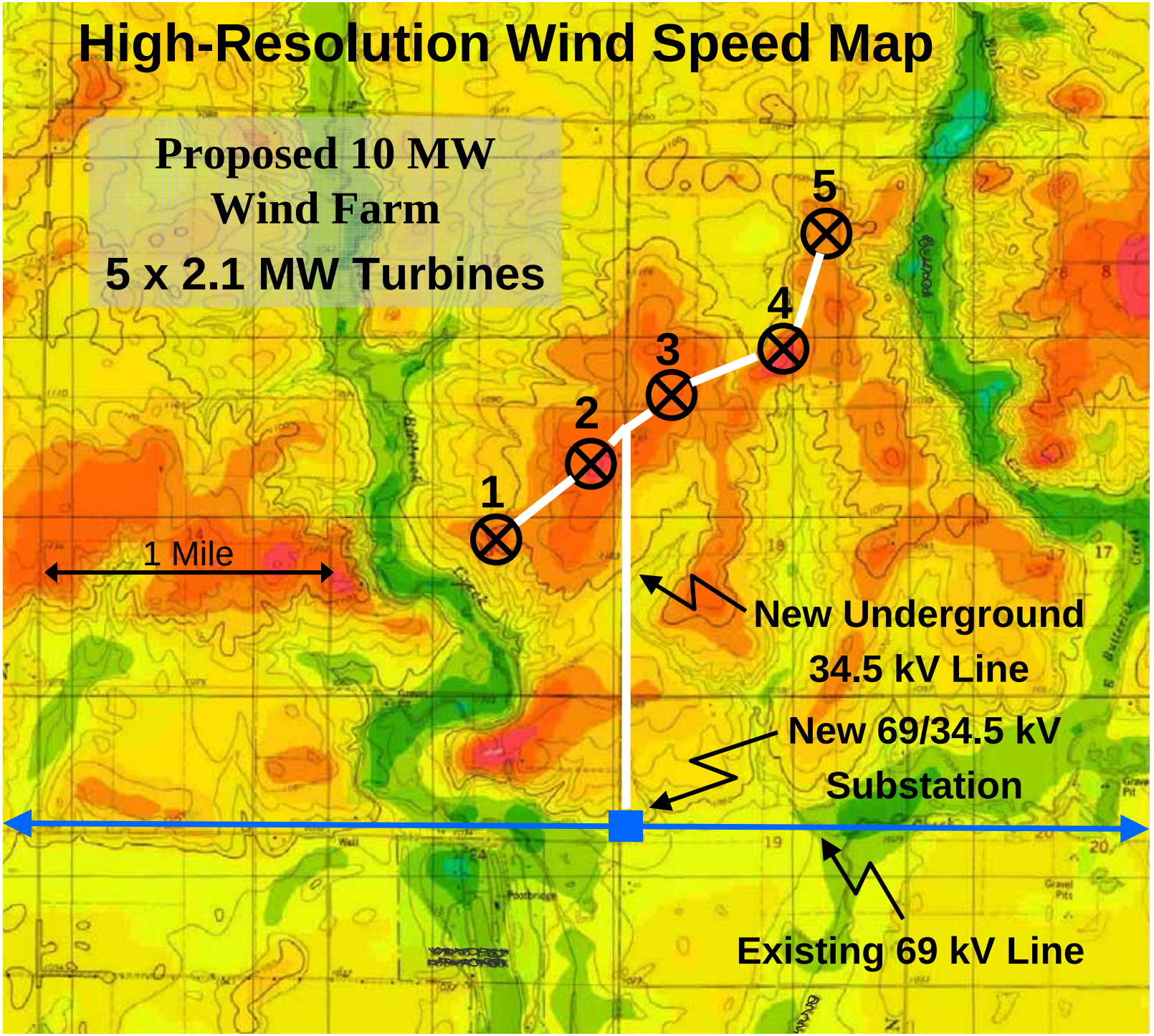
Line Items in a Proforma

- Operating Revenues
  - PPA revenue from Utility
  - Sale of Green Tags
  - Production incentives
- Operating Expenses
  - Operation and Maintenance expense
  - Insurance
  - Property taxes
  - Land Lease (if any)
  - Depreciation
- Loan payments
- Income Tax Calculations.

Wind Project Example

- Ten Megawatt Wind Farm
  - Five x 2 MW wind turbines
  - Five Owners, each having one wind turbine
  - Minnesota Flip Model used
  - Long-term PPA with local utility
- Installed near an existing 69 kV line
- In a windy area of Iowa (windiest 15% of Iowa).

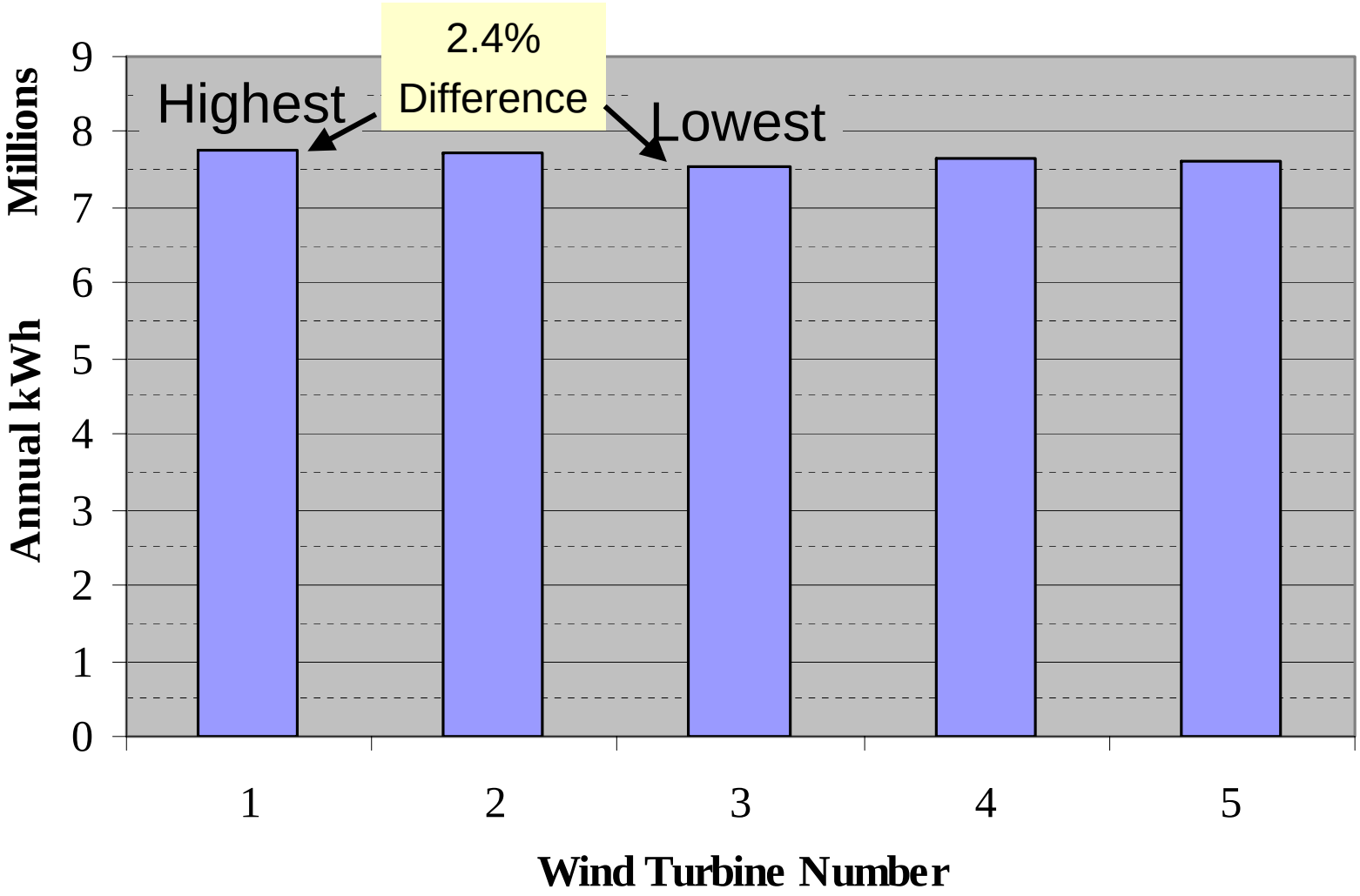



High-Resolution Wind Speed Map
Proposed 10 MW
Wind Farm
5 x 2.1 MW Turbines
1
2
3
4
5
1 Mile
New Underground
34.5 kV Line
New 69/34.5 kV
Substation
Existing 69 kV Line
Mean Wind
Speeds
in Meters
Per Second
at 50 Meters
7.85
7.8
7.75
7.7
7.65
7.6
7.55
7.5
7.45
7.4
7.35
7.3
7.25
7.2
7.15
7.1
7.05
7

Wind Generation Production Estimates

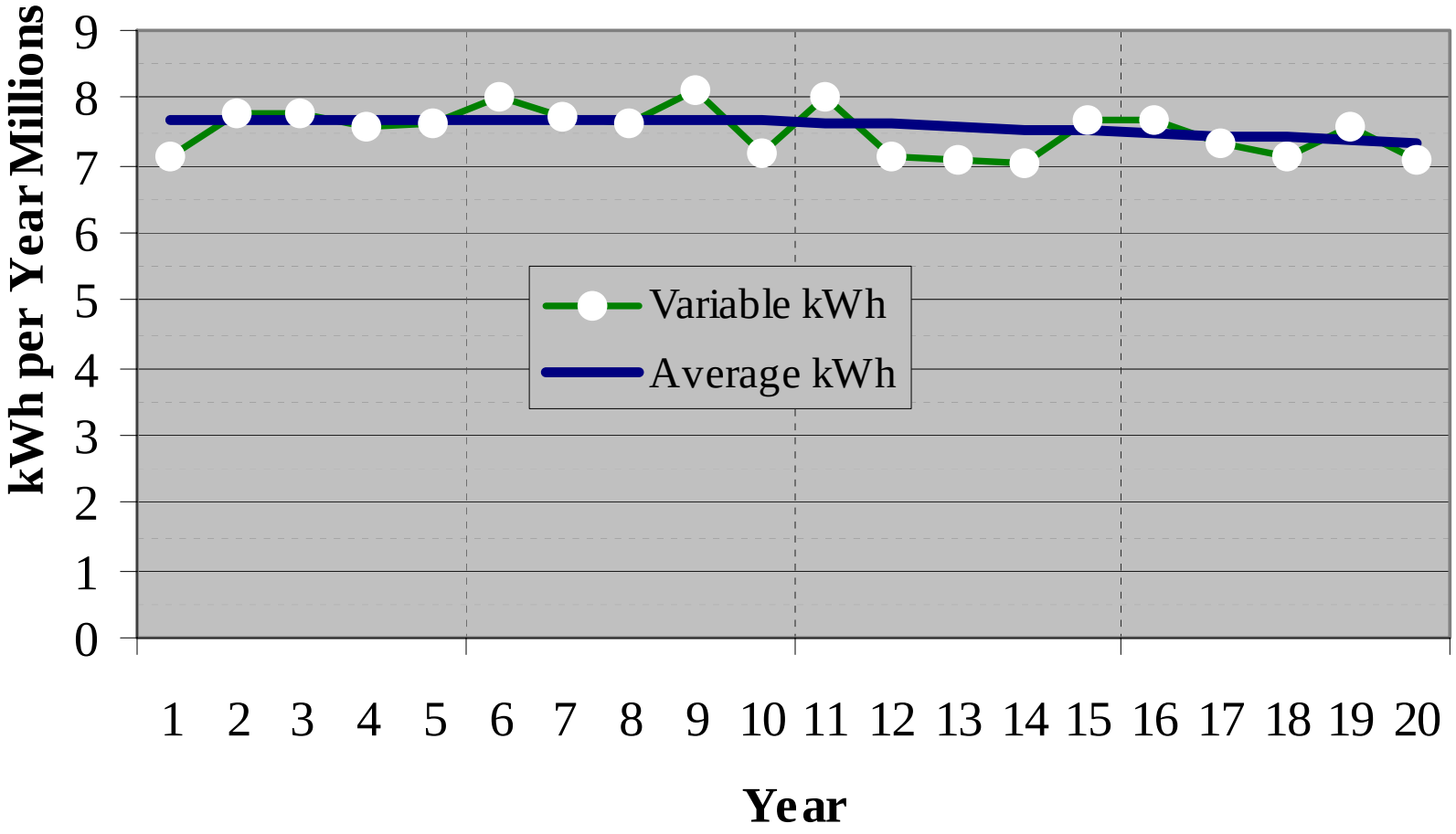
- Wind speed averages 7.7 meters per second ("mps") (or 17.2 mph) at 50 meters height, with a ± 0.05 mps difference between turbines.
  - At an 80 meter hub height, wind speeds are estimated to be average about 19.3 mph.
- Wake losses are different for each turbine, with the middle turbines having the highest wake losses (range is 0.7% to 2.9%)
  - Production differences between turbines will vary by about ±1.2% in this particular case
- Production will likely decline gradually in the later years of life, due to more maintenance and deterioration of blade surface.

Initial Annual Average kWh Generation by Wind Turbine Number



Actual Wind Generation Will Vary from Year to Year

Example of Variation in Wind Generation Versus Projected Average Annual Generation



Purpose of the Proforma Analysis

- The Proforma provides a succinct summary of all key financial assumptions about the project
- The financial assumptions cover all aspects of the project that can affect the return to the investors
- The Proforma answers the question…

Will the proposed project likely meet our return on investment objectives?

Items in the Proforma

- Overall Capital Cost of Project
- Sources of Financing
- Revenue from sale of energy and green tags, and other incentives
- Expenses for operation, maintenance, management, insurance, and taxes
- Production tax credits
- Income tax calculations
- Overall return on investment.

Assumptions for Proforma Scenario 1

- Overall Capital Cost of Project is about $1,350 per kW
- Minnesota Flip Model with outside investors owning 49% of the project
- Tax Investor provides 99% of Financing with a target return on investment of about 10%
- Ownership will flip to local owner when Tax Investor obtains a 10% return
- **Based on a number of assumptions for this scenario, it was determined that the PPA + Green Tag revenue of 4.8¢ per kWh was required to achieve a 10% return after 10 years for the tax investor.**

Capital Cost and Project Financing On a per Turbine Basis

(Based on Tax Investor Providing 99%)

Total Cost of Wind Generation Project	
$ 2,200,000	Wind Turbine(s)
$ 400,000	Balance of Plant, Site Adders
$ 156,000	Interconnection & Misc.
$ 30,000	Soft Costs (IDC, WC, Eng, etc)
$ 52,000	Contingencies
$ 2,838,000	Total Cost ($1,351/kW)

Sources of Capital		
$28,380	1.00%	Local Owner Investment
$ 2,809,620	99.0%	Tax Investor Investment
$ -	0.0%	USDA / Other Grants
$ -	0.0%	Commercial Loan at 8.00%
$ -	0.0%	AERLP Loan at 0% Interest
$ 2,838,000	100.0%	Total Wind Project Cost

Summary of Proforma Line Items

Scenario 1 - Reference Case					
Revenue (Turbine 4)	**Year 1**	**Year 5**	**Year 10**	**Year 15**	**Year 20**
Projected Annual kWh Generated	7,664,204	7,664,204	7,664,204	7,504,533	7,344,862
Revenue from PPA & Tags at 4.80¢ / kWh	**$ 367,882**	**$ 367,882**	**$ 367,882**	**$ 360,218**	**$ 352,553**

Observations On Scenario 1

- The required revenue of 4.8 ¢ per kWh is much higher than the available rates for wind power today in Iowa. Therefore the project is not economically feasible.
- What can be done to make the project financially feasible given today's typical PPA rates?

Scenario 2 has the Iowa 1.5¢ per kWh Tradable State Tax Credit.

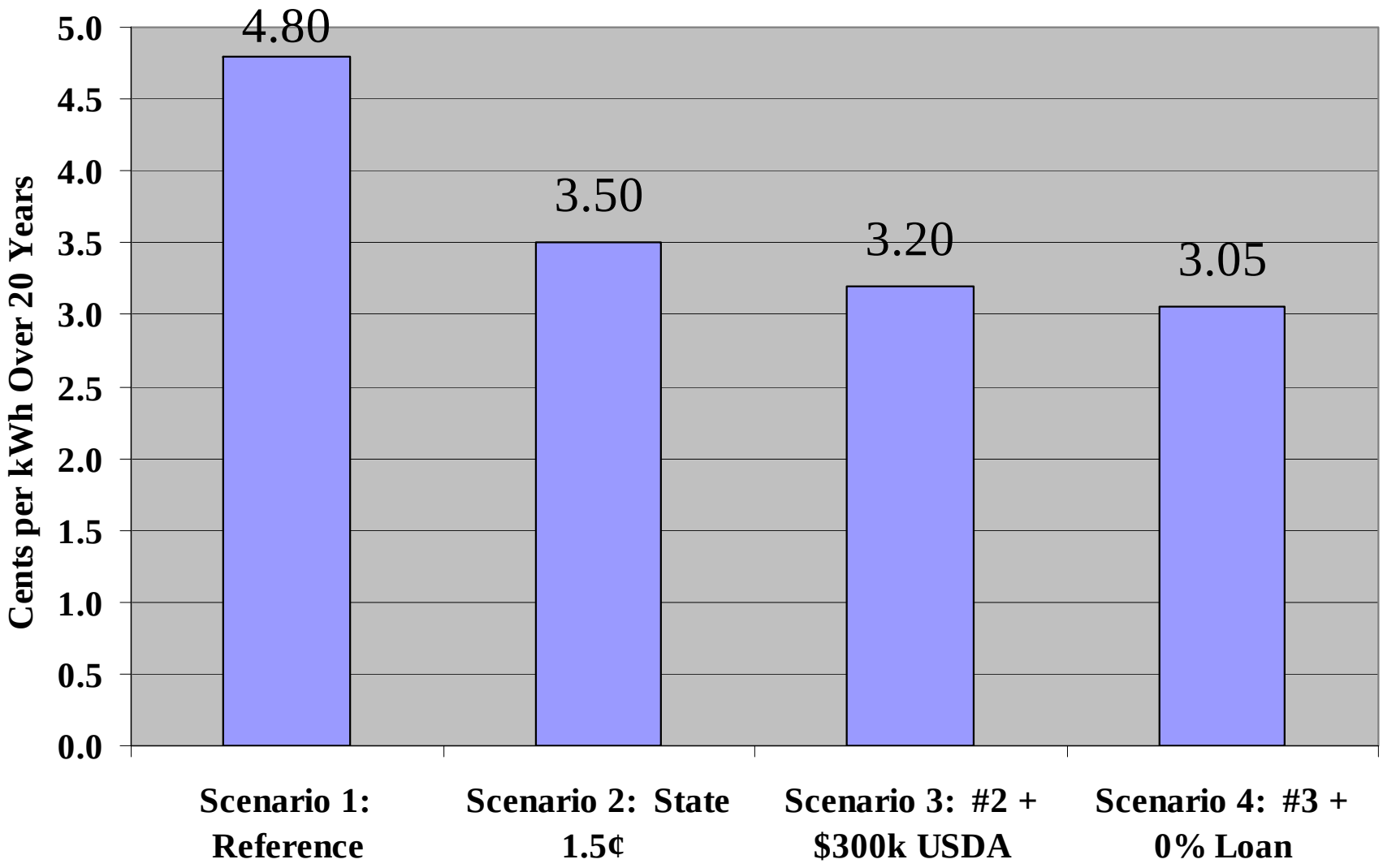
Summary of Proforma Line Items

Scenario 2 - Reference Case With Iowa 1.5¢ per kWh Tax Credit					
Revenue (Turbine 4)	**Year 1**	**Year 5**	**Year 10**	**Year 15**	**Year 20**
Projected Annual kWh Generated	7,664,204	7,664,204	7,664,204	7,504,533	7,344,862
Revenue from PPA & Tags at 3.50¢ / kWh	**$ 268,247**	**$ 268,247**	**$ 268,247**	**$ 262,659**	**$ 257,070**

Observations On Scenario 2

- In Scenario 2 with the Iowa 1.5¢ per kWh Tradable State Tax Credit, the required revenue dropped from 4.8¢ per kWh to 3.5¢ per kWh
- This reduced the required revenue by 1.3¢ per kWh
- The required revenue is still a little higher than the typical amount for wind power in Iowa
- What else can be done to make the project economically feasible?

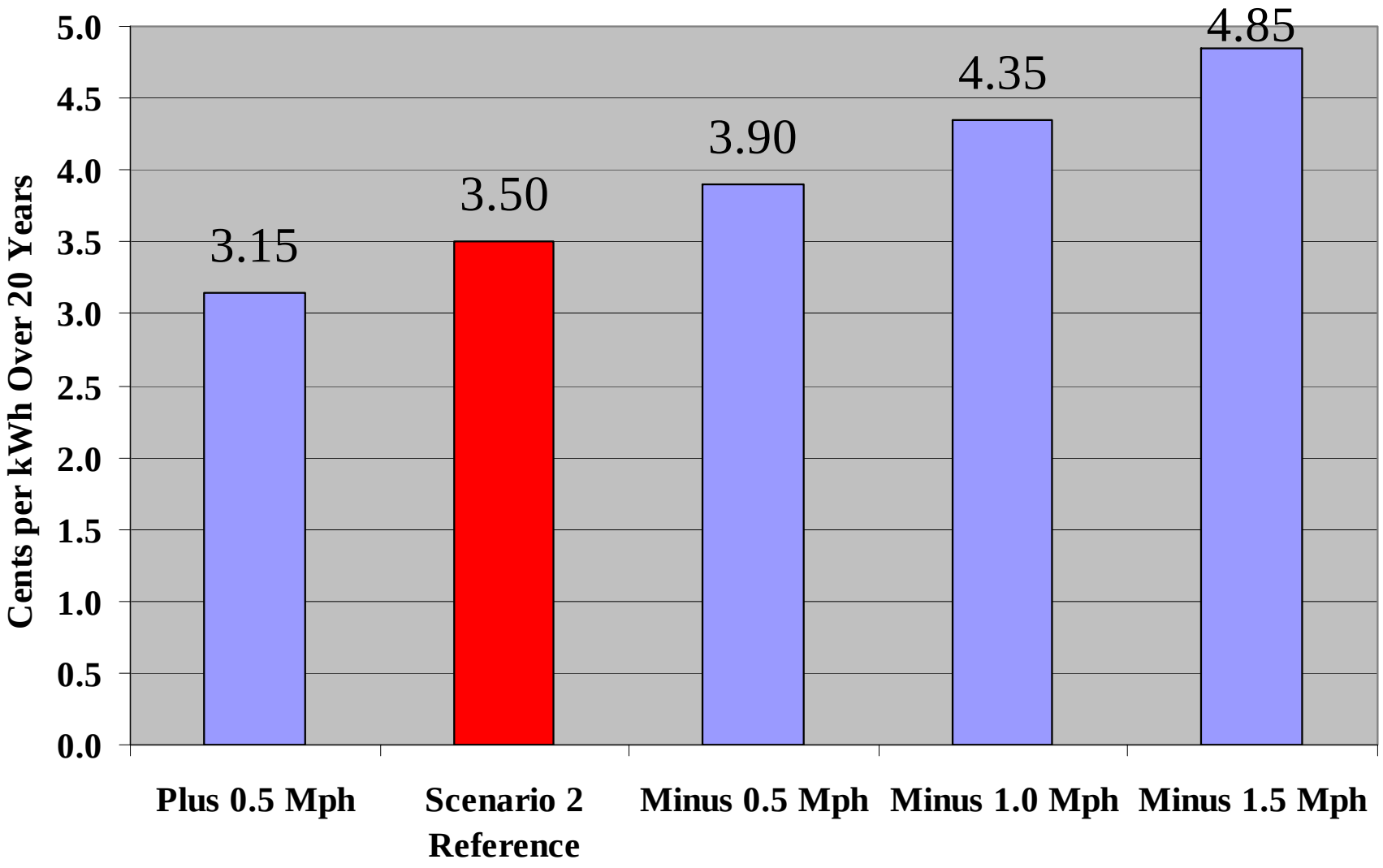
Required Revenue per kWh for Various Scenarios



Sensitivity to Input Assumptions

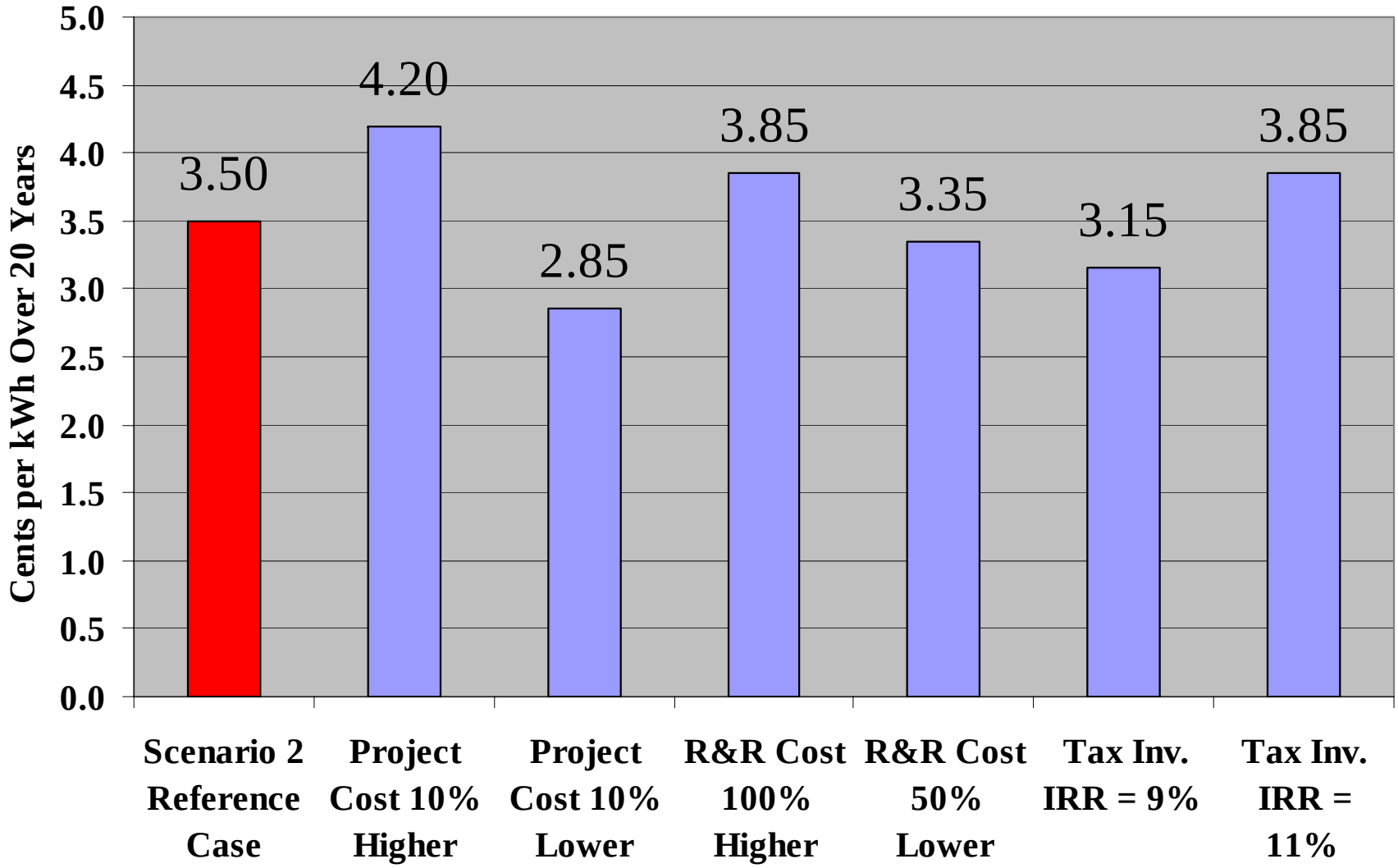
- Use Scenario 2 with the Iowa 1.5¢ per kWh Tradable State Tax Credit requiring revenue of 3.5¢ per kWh as the reference point
- How does the required revenue change for changes in:
  - Wind speed
  - Total project cost
  - Long-term R&R cost
  - Tax Investor required rate of return

Wind Speed Makes a Substantial Difference in the Required Revenue



Note: Changes in wind speed are based on 17.3 Mph at 50-meters for the Scenario 2.

Project Costs, Long-Term Repair and Replacement Costs and Investor Returns All Can Have a Significant Impact on the Revenue per kWh Needed



The Proforma Analysis Can Help Analyze Other Factors

- Adding another wind turbine to the project
- Moving a wind turbine to a different location with lower wake losses and longer electrical cables
- How the return to the local owner is affected by the subtleties of various contract terms
- How the flip date changes with various factors (for a guaranteed minimum return for the Tax Investor).

CREB Financing

- Clean Renewable Energy Bonds ("CREB") provides an alternative to the old Renewable Energy Production Incentive ("REPI") program for non-profit entities.
  - Congress budgets a small fraction of the full amount needed to make REPI equivalent to the federal PTC
- CREB provides zero percentage interest bond financing
- The term of the CREB bonds is based on interest rates and will typically be limited to about 15 years.

Comparison of Minnesota Flip Model Financing to CREB Financing

- Based on the Scenario 1 case, the minimum PPA needed for the project example was 4.80 ¢ per kWh
- For the same project owned by a non-profit entity and now financed with CREB bonds and no other grants or incentives, the 20-year levelized cost of wind power would be 3.6¢ per kWh, a savings of 1.2¢ per kWh
- Using CREB provides about the same benefit as the federal PTC and the Iowa 1.5¢ tax credit combined for this specific case
- The advantage of CREB financing compared to using the PTC increases as the wind speed goes **down,** since the PTC also decreases

Summary and Conclusions

- A financial proforma is a very useful financial analysis tool for determining:
  - What minimum revenue per kWh is needed for a specific project
  - How changes in project layouts that affect costs and wind speeds affect project economics
  - How changes in financing assumptions affect the project economics
  - How uncertainties in wind speed will affect the returns to the investors
- CREB financing is an attractive alternative to replace the unreliable REPI program and can be competitive with the PTC in some cases.