

*Current Issues in
Construction of Renewable
Energy Projects*

*MSBA Construction Law
Section*



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Introduction

Many of the issues surrounding construction contracting in the renewable business are driven by larger market factors, which affect the opportunities available and define how those opportunities are best met.

Specific construction contracting issues, as in many areas, depend on project size, and developer and manufacturer experience and expertise

Typical Wind Turbine Installation

- | Turbine
- | Tower
- | Transformers, cable, electrical equipment, substation
- | Soil borings, foundation design
- | Roads, crane pads, other civil
- | Foundation
- | Assembly, erection, installation
- | Commissioning by manufacturer
- | Transmission upgrades - utility



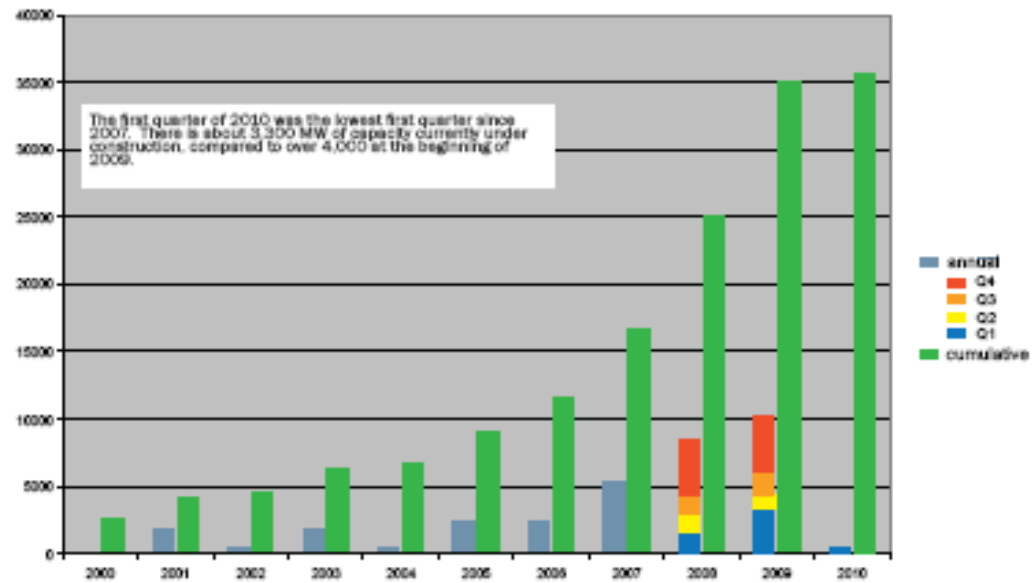
Typical Wind Turbine Installation Cont.

- | Large proportion of project is manufactured equipment – leaving BOP for actual construction/assembly per design and installation manual
- | Over time much of the work has become relatively standardized – the majority of any project does not require unique design
- | Allows for greater ease of entry into the field – if capable of building office buildings, ethanol plants, stadiums, big box stores, the skill sets transfer to this type of work

Wind Industry Growth

- | Industry experienced dramatic growth over short period of time:
 - 2000 – cumulative installed total – 2502 MW
 - 2009 – cumulative installed total – 35,000 MW with 10,000 MW installed in 2009 alone

U.S. Annual and Cumulative Wind Power Installations



American Wind Energy Association • Q1/Q2 2010 Market Report

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U.S. Annual and Cumulative Wind Power Installations

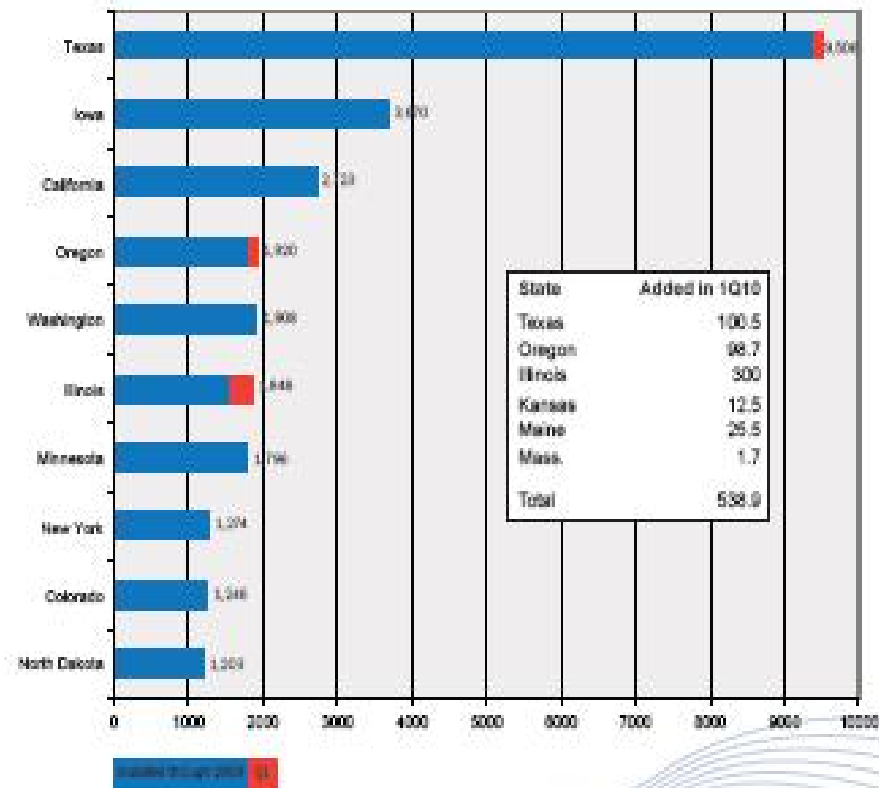
Wind Industry Growth Cont.

- | Initial Minnesota projects were:
 - Kenetech (25 MW – 1994)
 - Lake Benton I (107.25 MW – 1998)
 - Lakota/Shaokatan/Woodstock (33.13MW-1999)
 - Lake Benton II (103.5 MW – 2000)

Wind Industry Growth Cont.

- I Drivers included:
 - (a) New technology, both better quality and longer, leading to expanded geographical reach

Wind Project Installations by State (Top Ten States)



Wind Industry Growth Cont.

- | (b) State mandates defining new markets
- | (c) Carbon/green tag markets
- | (d) New money (BP, GE, Citibank, Goldman Sachs, Iberdrola, EON)
- | (e) Establishment of known permitting standards
- | (f) Improved grid access, regulatory environments
- | (g) Improved cost profile and pricing

Wind Industry Growth Cont.

- | By 2007-2009, factors combined to drive major industry growth. Because of transferability of skills, construction industry largely able to keep up with increased demand with new entrants and resources

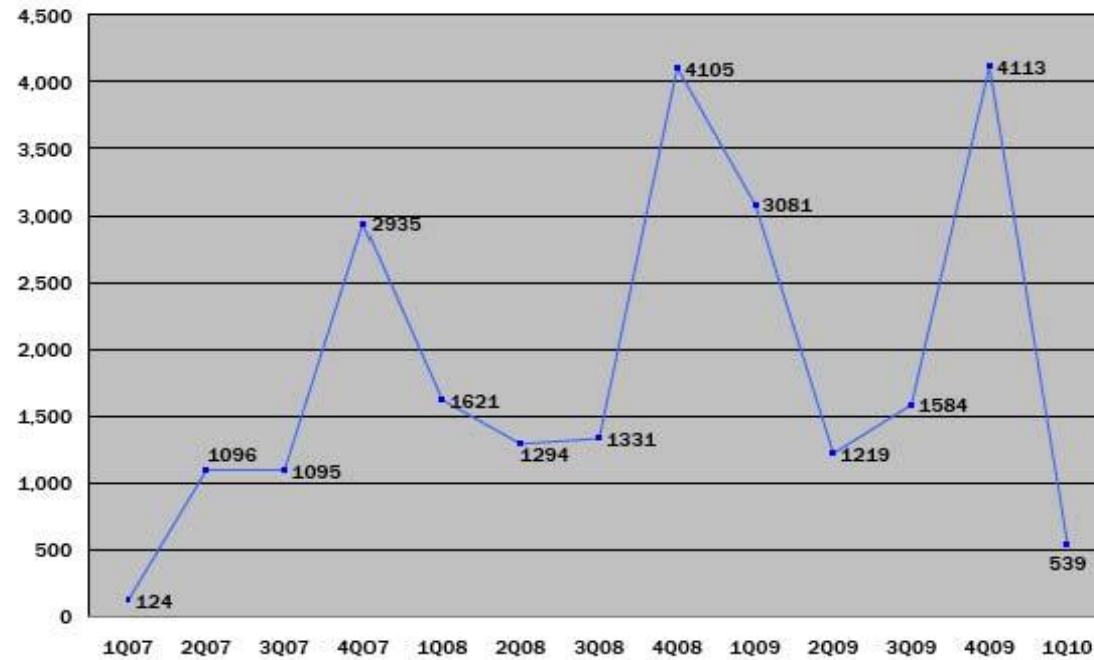
Current Issues

I A. Financing

- Industry dependent on financing which in turn has been dependent on US production tax credits and similar incentives. See Minn. Stat. Section 216C.41; Iowa Code Chapter 476C.
- When PTC lapsed every 2 years, industry stopped

Quarterly Installations Reflect Market Volatility

The cycle of wind capacity installations over the past few years, illustrated by the figure below, has created a poor environment for long-term investment decisions, particularly in wind manufacturing. Dozens of manufacturing companies have already made commitments to build and upgrade U.S. facilities, despite the market's booms and busts. These companies have created the foundation for renewing the American manufacturing sector and the U.S. could see explosive growth the instant there is a sign of market stability and U.S. commitment to long term policy.



Issues Cont.

- Vulnerability also to recent economic/financial crisis which stopped project financing; like many other areas of construction economy, work has dropped to low point in Q1 2010 generally.
- At a time when firms just completed transferring large amounts of resources to this industry, market crashes

Issues Cont.

- Results:
 - Fierce competition and lower margins or layoffs and worse
 - More risk adverse lenders and investors may demand higher level of perceived construction expertise and financial/bonding capability

Issues Cont.

- Responses:
 - New Sources of Capital
 - Section 1603 Grants
 - ✓ Section 1603 of the American Recovery and Reinvestment Act provides certain options to new project owners. In lieu of PTCs, for example, owners can receive a cash grant of 30% of eligible project costs from the federal government, or may elect a 30% investment tax credit.

Issues Cont.

Intent was to delink project financing from reliance on entities who can use production tax credits and allow a broader range of possible equity investors.

Principal remaining tax benefit is MACRS depreciation/net losses, received over the first six years of project.

Issues Cont.

- Responses:
 - New Sources of Capital
 - Manufacturers and contractors
 - ✓ Some are financing turbine purchases and BOP during construction to overcome lack of traditional credit for construction
 - ✓ Some are taking longer positions in projects to encourage purchases of their turbines – in particular, Chinese manufacturers are exploring longer term equity positions in projects using their turbines
 - ✓ May involve loans or investments that require dedication of all net revenues to repayment, especially if foreign investor cannot use tax benefits

Issues Cont.

- I B. Emerging Market Constraints
 - Transmission
 - Increased project opposition and new permitting standards
 - Market Saturation
 - Market Economics

Issues Cont.

I C. QC/QA Issues

Combination of new manufacturers with limited experience of compliance with OSHA, other requirements, and new construction companies often lead to QA/QC issues

Examples: East Ridge fatality

Foundations(Pipestone,
Enron, Fenner)

EWT





QC/QA Issues Cont.

- | Response:
- | 1. Market/manufacturers/lenders/owners drive stricter standards for quality and safety
- | 2. Promulgation of new industry standards
 - AWEA, ANSI
 - Local electrical, arc flash standards
- | 3. Greater attention to allocation of risk between manufacturers and contractors in contracts

Consequences may include higher costs, inflexibility, with disproportionate impact on smaller projects and contractors

Issues Cont.

D. Project Contract Structures

- | 1. EPC Structure – common for larger projects where lenders require bonding, prefer wrap to reduce risk of delivery and coordination issues, especially where developer lacks expertise.
- | In current market, contractors prefer because inclusion of equipment increases revenues
- | Established manufacturers may prefer as it allows contract provisions that handle contractor risk better

Project Contract Structures

Cont.

- I 2. Separate Prime Contracts
 - where developer or owner has expertise, and may not have to meet requirements of larger lenders
 - no need to pay for GC/EPC coordination
 - opportunities for use of lower cost suppliers/subcontractors

Solar Market Developments

- | Current Market similar to wind in late 1990s
- | Construction similar to wind in that mostly equipment installation
- | While there is a market for larger projects, with larger contracts, and usual market participants are promoting (large lenders, investors, contractors, law firms), growth will be in smaller, distributed markets, not requiring use of these.
- | Same issues as wind

Other Markets

- | Geothermal
- | Biomass

About Jeffrey C. Paulson

- | Jeffrey C. Paulson is the principal in his own law firm in Minneapolis, and has been practicing in the area of energy law for over thirty years. After graduation from Carleton College in 1978 and the University of Chicago Law School in 1981, he practiced utility law and litigation in Illinois. From 1987 to 1994 he practiced in the Twin Cities in construction law and representation of developers and banks in real estate workouts and financings.
- | He joined Northern States Power Company in 1994, where he was the attorney primarily responsible for the development and financing of its original large wind and biomass projects, including related permitting and regulatory approvals.

About Jeffrey C. Paulson (continued)

- I He left NSP in 1998 to establish his own practice representing clients developing, financing and owning renewable energy projects in Minnesota and around the country including debt and equity financing of such projects. While his clients include large national and international manufacturers, developers, and project owners, a greater portion of his time is spent representing local developers and owners working on projects to be owned by individual community members, colleges, nonprofits and other nontraditional generation owners.
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