Risk Mitigation Strategies – Perspective on Dealing with Renewable Power’s Revenue Uncertainty

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Agenda

Introduction

Examining the issue

Mitigation strategies

Wrap-up
Introduction
What is risk?

**Unrewarded risk**

Nothing is gained from taking the risk

Relates to risk areas such as regulatory compliance (i.e. no upside for non-compliance)

**Rewarded risk**

Provides a premium if managed well

Relates to strategy and business decisions, where value is created

*Neglect compliance and you may be out of business!*

*Avoid all risks and you will forego the reward!*
Risk management can help to create as well as preserve value.

Maximize creation of shareholder value

- New technology use
- Increased revenue
- Increased market share

Minimize erosion of shareholder value

- Penalties and fines
- Fraud
- Lawsuits
What is enterprise risk management (ERM)?

- ERM can enable businesses to:
  - Identify risks proactively before they impact the business
  - Create a more risk aware culture
  - Establish cross-functional communication/visibility
  - Systematically quantify risks providing an appreciation of potential impacts
  - Enhance strategic and operational planning and implementation
  - Take advantage of opportunities to increase value and manage exposure
Why are companies investing in ERM?

• Recent perceived exposures and/or significant events
• Leading practice among peers
• Questions from the board of directors
• Guidelines from regulators
• Economic environment
ERM value proposition

ERM can support a company’s business growth strategy by:

- Enhancing communication across business units and across various risk categories
- Quantifying risks
- Identifying potential value reducing situations
- Identifying opportunities to target growth opportunities within risk tolerances
- Enhancing profitability and cash flow
Energy industry risks (illustrative)

- Commodity Price
- Volumetric
- Outage
- Supply Following Risk
- Environmental
- Regulatory
- Congestion Risk

More Hedge-able vs. Less Hedge-able
Quantifiable vs. Not Quantifiable
Examining the Issue
Specific alternative energy risks

• Price risk – hourly prices are different than forward prices, and forward prices are different than forecasts

• Supply risk – the wind doesn’t blow or the sun doesn’t shine

• Other – transmission, unplanned outages, etc.
## Perspective on financial impact

<table>
<thead>
<tr>
<th>$ (millions)</th>
<th>Budget - 2015</th>
<th>Budget + Risk to expiry(^1) - upside</th>
<th>Budget + Risk to expiry - downside</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues (capacity, energy, other)</td>
<td>$850</td>
<td>$960</td>
<td>$760</td>
</tr>
<tr>
<td>Expenses (direct, O&amp;M, other)</td>
<td>($270)</td>
<td>($310)</td>
<td>($260)</td>
</tr>
<tr>
<td>EBITDA</td>
<td>$580</td>
<td>$650</td>
<td>$500</td>
</tr>
<tr>
<td>Interest expense</td>
<td>($210)</td>
<td>($210)</td>
<td>($210)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>($260)</td>
<td>($260)</td>
<td>($260)</td>
</tr>
<tr>
<td>Other</td>
<td>($20)</td>
<td>($20)</td>
<td>($20)</td>
</tr>
<tr>
<td><strong>Pre-tax income</strong></td>
<td><strong>$90</strong></td>
<td><strong>$160</strong></td>
<td><strong>$10</strong></td>
</tr>
</tbody>
</table>

\(^1\)Risk to expiry is defined as the risk from the current time through the end of the budget period

Within acceptable expectations?
Price and volume risk…What to do?

**Actual prices differ from forecasts…and,**

**Actual generation varies from forecasts and expected loads**
A risk mitigation framework

Monitoring & responding

Risk assessment

Hedge strategy design

Objective-setting
Assessing exposure

Use quantitative financial methods to generate range of price-volume pairs …

…in order to determine a probabilistic range of exposure.

Inclusive of price and volume impact

Frequency / Probability

Potential Financial Outcomes

Today → Expiry

Price Paths

Volume Paths
Polar nature of market price risk

There is risk in not hedging

Unhedged

Declining market

Revenue At Risk

There is risk in hedging

Rising market

Hedged

Hedge Loss At Risk
Developing market-compatible strategies

Illustrative

Strategy A
Strategy B
Strategy C

Potential financial outcomes (revenue, margin, income, etc.)

Protect against unfavorable outcomes

Manage within corporate financial objectives

Mean expectation

Minimize tradeoff
Other risk factors affecting financial plans

• Volumetric
• Counterparty/credit
• Liquidity
• Strategic risk
Implications to business planning

• Need to deploy robust quantification techniques to develop a better understanding of outlier events
• Discussion of what is tolerable and intolerable
• A process for designing effective risk mitigation strategies
• A means to represent portfolio risk in financial plans
• A framework for evaluating the outcomes of different hedge strategies
• A means for measuring, monitoring and responding to risks
Mitigation Strategies
Intermittent supply risk

• What is Intermittent supply risk?

• How does it impact your business?

• What options do you have to manage it?
Intermittent supply risk

Some considerations:

- Revenue protection vs. MtM risk
- Credit capacity
- Time periods
- Baseload vs. peak vs. off peak
- Liquidity?
A focus on hedge program design

- Monitoring & responding
- Risk assessment
- Hedge strategy design
- Objective-setting
Clearly defined, quantifiable, and market compatible objectives…

<table>
<thead>
<tr>
<th><strong>Revenue/Earnings</strong></th>
<th>• Manage the price risk so that the revenues are at least $X million at a certain statistical confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hedge Losses</strong></td>
<td>• Manage hedges so hedge losses do not exceed $X million at a certain statistical confidence interval</td>
</tr>
<tr>
<td><strong>Options Budget</strong></td>
<td>• Set aside $X million in an options budget</td>
</tr>
</tbody>
</table>

The objective of a hedge program is NOT to make money (i.e., profit/loss) – or to be speculative (i.e. “I think prices are going down, so I’m not going to hedge”)
Different categories of hedges

• **Reduce volatility - dollar-cost average hedges**
  – Small increments, long-dated maturities

• **Protect financial requirements - responsive**
  – To intolerable price and volatility impacts

• **Mitigate losses**
  – As hedge positions have the potential for large, negative mark-to-markets

• **Management directed**
  – Based on fundamental or technical analysis
Implications to portfolio design

Seeking the right mix

Instrument  Duration  Percentage  Proportion
Testing hedge strategies and interpreting results

The selection of C v. D is primarily about trade-offs and based on the organization’s hierarchy of objectives.

Objective 1
(e.g., revenues)

Objective 2
(example: hedge losses)

Outcome if 0% hedged

Outcome if 100% hedged

C > A with respect to Objective 1

D > B with respect to Objective 2

The selection of C v. D is primarily about trade-offs and based on the organization’s hierarchy of objectives.
Wrap-up
A path forward
Questions?
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