

EXPLORING CLIMATE CHANGE BUSINESS PROCESS REQUIREMENTS FOR ENERGY COMPANIES

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Abstract

The plethora of climate change regulations and trading regimes already implemented and developing across the U.S. presents enormous challenges and opportunities for energy trading companies to profit from new products and services, build early mover advantages, and avoid unnecessary compliance costs. To reap the benefits of these challenges and opportunities, however, requires that companies begin an early and extensive review of the potential changes to a key structural component of their operations - business processes.

This paper explores key issues and questions that should be addressed in order to begin building a mature organization for carbon trading and managing environmental assets like carbon allowances and offset credits. We focus on a set of inquiries and observations that will guide the exploration and assessment of processes that will ultimately help build the capabilities required to participate in environmental markets, specifically the markets for carbon allowances and offsets and renewable energy credits. Given the uncertainty in regulation at the U.S. federal level and the emerging and somewhat disparate regulations at the state and regional level, we address primary, high-level considerations for re-designing transacting business processes.

Introduction

Climate change and carbon markets represent one of the key external factors globally shaping the landscape of energy companies. Carbon markets influence key sectors of the energy industry – power, gas, oil, refined products, and weather. While there is considerable uncertainty about how carbon regulation will ultimately come to pass on a federal level in the United States, there are indicators that provide insight into which industries will be most affected. With electricity generation and transportation accounting for over half of greenhouse gas emissions in the United States (Energy Information Administration, 2008), carbon regulation will directly affect the energy industry and energy value chain – either through electricity generation, oil and gas production and gas processing, or the combustion of fuel in transportation.

Many energy companies have taken a wait-and-see approach given the uncertainty in carbon regulations in the United States, while others are in various stages of developing a strategic and

operational response to climate change and the developing carbon markets. Most of the focus has been on the development of strategy including (1) how to respond to new markets and evolving requirements around business processes, technology, and organizational structure in the areas of compliance, (2) how to manage climate change risk and disclosure requirements, (3) how, if possible, to monetize carbon assets and options present in existing or new projects and (4) how to meet the minimum requirements for regulatory reporting. Spending on meeting the multitude of compliance requirements has been one significant element of the overall spending. In many cases, however, the strategic response from many energy companies has been inconsistent and fragmented as a result of:

- Lack of understanding of existing and emerging compliance requirements faced by the company
- Poor strategy development (inappropriate consideration for the effectiveness or efficiency of the approach undertaken to integrate emerging requirements into a broader regulatory compliance framework)
- Lack of coordination among business functions
- Failure to assess and include the full set of business requirements (primarily due to insufficient coordination)

This has led to costly inefficiencies and resulted in approaches that have added overlapping processes and controls to address requirements and have brought challenges to focusing and managing the right risks.

Less common are the companies that have taken the initiative to gain experience in voluntary carbon markets or companies that have fully developed business processes and the related technology infrastructure to measure, monitor, report and potentially trade carbon.

The operational and infrastructure requirements resulting from carbon legislation will likely be substantial. For example, energy firms will need to contend with and address opportunities and risks around:

- Emerging carbon regulation
- Linking carbon reduction opportunities to renewable energy and offset credit markets
- Requests for enhanced climate change risk disclosure and reporting
- Sustainability initiatives and reporting
- Active lobbying
- Increased market volatility

Having the appropriate business processes thus becomes a necessary component to implementing a strategic response. This article focuses on the impact of business processes on one segment of climate change - carbon trading – where the size of the U.S. market for carbon equivalents has been estimated to be \$1 trillion by 2020 (New Carbon Finance, 2008).

What is Carbon Trading?

In the World Bank's "State and Trends of Carbon Markets 2006" report (WB 2006), *carbon transactions* are defined as "purchase contracts whereby one party pays another party in exchange for a given quantity of GHG emission reductions, either in the form of allowances or "credits" that the buyer can use to meet its compliance objectives vis-à-vis greenhouse gas mitigation. Payment for emission reductions can be made using one or more of the following forms: cash, equity, debt, or in-kind contributions such as providing technologies to abate GHG emissions". In referencing the European Emission Trading Scheme (EU ETS), the report discusses European Union Allowances (EUAs) as well as Certified Emission Reductions (CERs) and Emission Reduction Units (ERUs) offered under the Clean Development Mechanism (CDM) and Joint Implementation (JI) Framework of the Kyoto Protocol. The report specifically categorizes carbon transactions into two main categories - allowance based transactions and project based transactions.

Allowance-Based Transactions

Allowance-based transactions in which the buyer purchases emission allowances created and allocated (or auctioned) by regulators under cap-and-trade regimes, such as Assigned Amount Units (AAUs) under the Kyoto Protocol, or EUAs under the EU ETS. "Cap-and-trade" allowance markets have high environmental credibility because they establish a flexible structure to achieve the desired level of environmental performance established by the level of caps set. (WB 2006)

Project-based transactions

Project-based transactions in which the buyer purchases emission credits from a project that can credibly and verifiably demonstrate that it reduces GHG emissions compared with what would have happened otherwise. The most notable examples of such activities are under the CDM and the JI Framework under the Kyoto Protocol, generating CERs and Emission Reduction Units (ERUs) respectively. (WB 2006)

An overview of cap-and trade concepts for trading allowances and offset credits and emerging U.S. carbon markets is illustrated in Figure 1 and briefly discussed below.

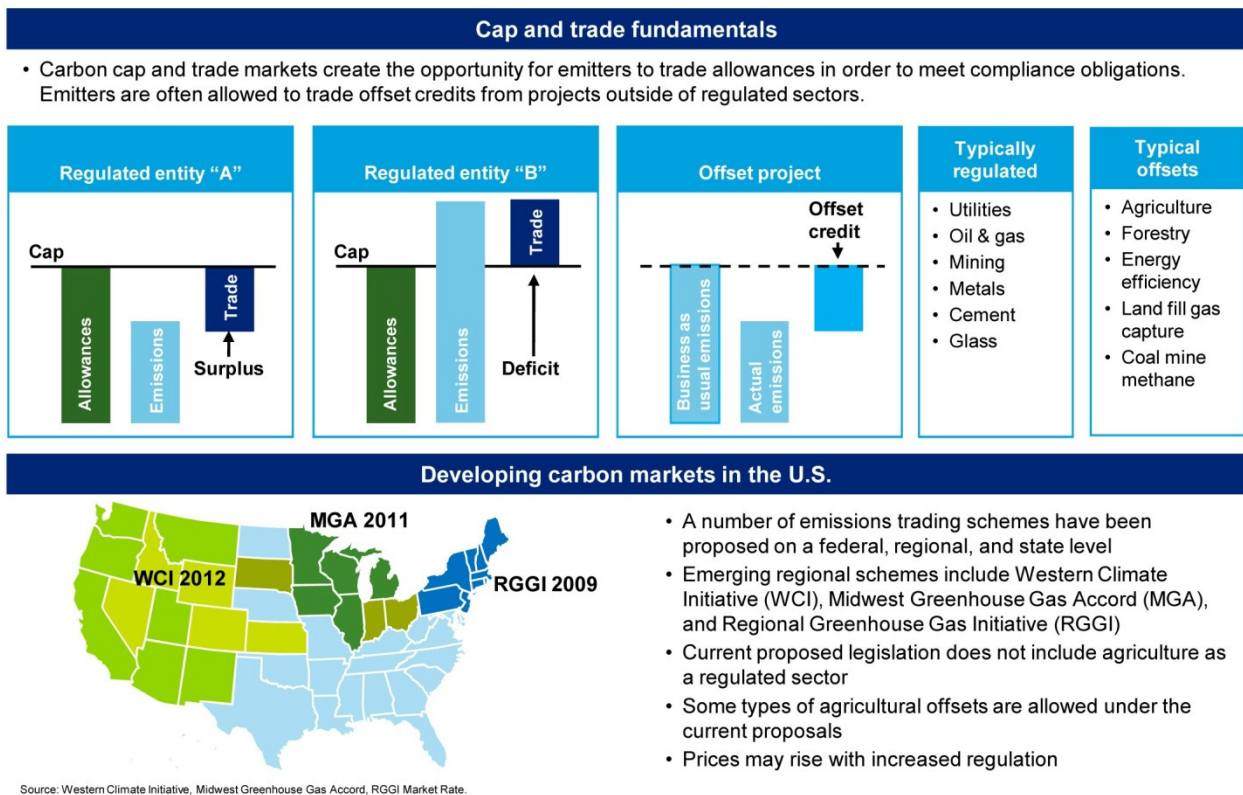


Figure 1. Cap and Trade Overview
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While many foreign countries, primarily in Europe, participate in a more mature market for trading carbon than in North America, allowance-based trading has started among ten northeastern and Mid-Atlantic States in the U.S. belonging to a common market known as the Regional Greenhouse Gas Initiative (RGGI) where the first compliance period began in January 2009. Other emerging regional markets include the Midwest Gas Accord (MGA) and the Western Climate Initiative. Four Canadian provinces and 7 western U.S. states plan to participate in the allowance trading scheme of the Western Climate Initiative (WCI).

Lastly, a voluntary market for broad-based trading of several GHG’s including CO₂, the Chicago Climate Exchange (CCX) provides an exchange-based platform for its global members to trade carbon allowances and project-based credits, known as Carbon Financial Instrument (CFI) contracts. These are contracts where each contract represents 100 metric tons of CO₂ equivalent. The CCX launched trading of CFI’s in December 2003.

Impact on Business Procession in The Energy and Transacting Lifecycle

Trading companies are already familiar with the concepts and methodologies associated with business process re-engineering as energy markets have progressed through a number of

structural changes over the years. What often happens, however, is that companies underestimate the resources required to get “As-Is” business processes documented and vetted across key stakeholders in the firm. As such, re-designing and documenting the “To Be” state of processes, as companies respond to new regulatory and market realities, often gets overshadowed by business objectives and metrics that focus on presumably, less resource-intensive financial rewards. This is often a mistake since business process re-design can provide substantial improvement to the bottom line by: (1) removing redundancies, (2) adding efficiencies, and in many cases, (3) helping to identify new market opportunities. It is the latter of the three that climate change brings into clear focus.

We have seen the new opportunities some firms have already capitalized on as climate change markets have grown in the U.S. over the last five years. For instance, with respect to renewable energy credits (RECs) awarded to end-users for photovoltaic systems, aggregators have already emerged who can bundle and re-sell RECs from a number of individual owners. Likewise, brokers and electronic exchange platforms for trading emission allowances and offset credits have emerged and new ones are entering the market rather frequently.

Trading for the typical energy company, however, raises a host of issues around the physical tracking and reporting of carbon including the following:

Measuring & Monitoring

- Have all emissions sources been identified?
- How will I document my emissions inventory?
- How do I select and implement an emissions monitoring system?
- How do monitoring systems feed into trading and risk management systems or into management and regulatory reporting?

Verifying

- Is 3rd party verification required?
- Is limited or reasonable assurance needed?
- Will my procedures documentation satisfy the requirements for 3rd party verification?
- Do I have adequate internal controls?

Reporting

- Have I considered all reporting requirements—including external and management reporting?
- To what audiences do I need to report?
- What form must reports take?
- Do my systems automatically generate the proper reports?

Trading

- What is my trading strategy?
- How can I manage emissions trading risk?
- How can I ensure my traders are in compliance of regulatory standards?
- How do I measure carbon risk?

Valuing

- What does an emissions forward curve look like?
- How do I value my current carbon portfolio?
- How does carbon affect my strategic decisions, such as mergers & acquisitions or asset acquisitions?

Accounting

- How do I reflect my carbon position on my income statement and balance sheet?
- How do we integrate accounting implications into our carbon decisions?

Carbon trading is not a “plug-and-play” into existing transacting and risk management systems. Participation in carbon trading impacts the entire energy transacting lifecycle, presenting various challenges as well as opportunities around business processes and infrastructure. A number of business processes are impacted across the energy transacting lifecycle. Figure 2 below provides an overview of some key business processes.

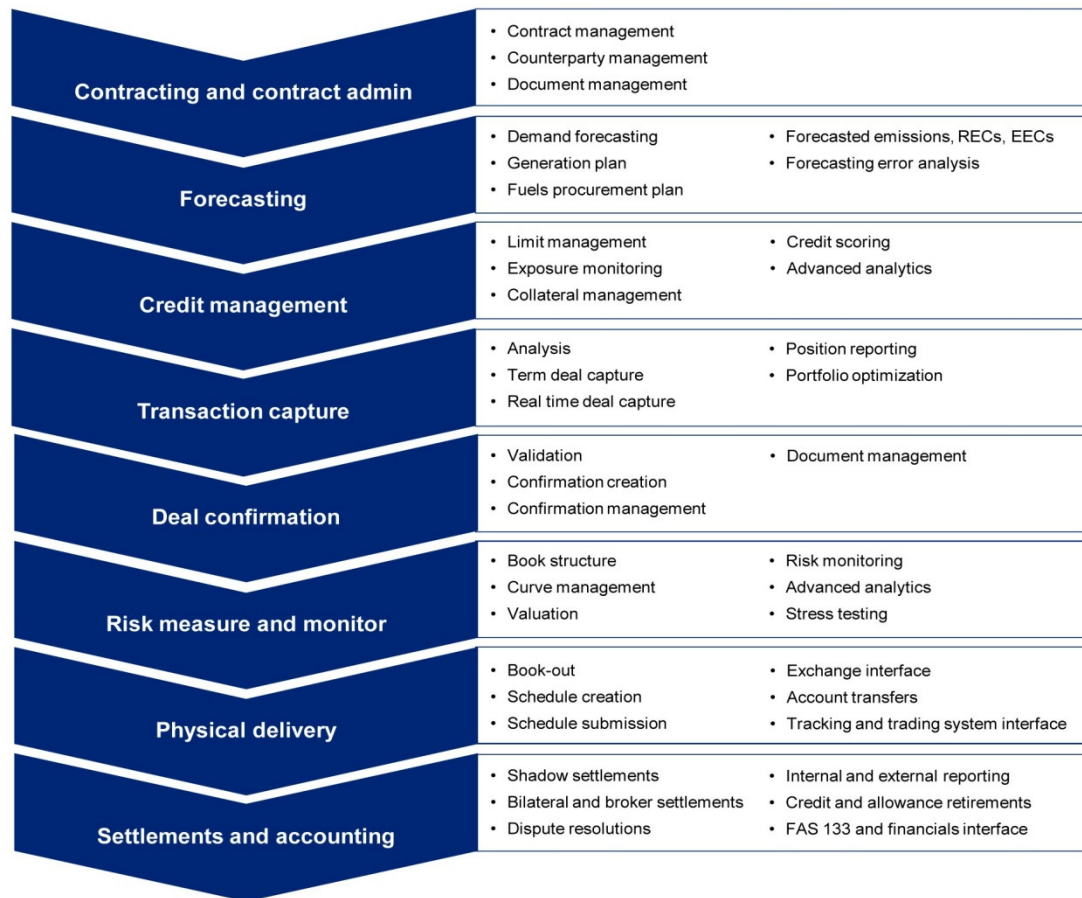


Figure 2. Sample Business Processes for Energy Transacting

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To fully understand the impact of climate change on these processes, we explore, in more detail, many of the questions that can drive development or overhaul of the energy transacting processes.

Contract Administration

- What new contracts and contracting strategies are required? Will these new strategies require new processes?
- What is the process of reviewing contracts for environmental rights? How different are these processes from the standard contracting processes? What dependencies do these processes create?
- How will existing technology support these processes?
- What changes are required to netting agreements?
- Have shared ownership rights been reviewed?
- Has the impact of jurisdictional issues for offsets been evaluated?
- Do receipt and delivery points impact regional or state level eligibility?

Forecasting

- How does the current forecasting process change?
- Have forecasting time horizons been considered with respect to compliance horizons?
- Are environmental commodities being sold with or without associated energy? What processes are needed to monitor the same?
- Have banking & borrowing strategies been addressed in the forecast?
- Are long/short positions relative to compliance targets addressed?
- What is the process for making probabilistic “adjustments” for offsets, if required?
- Has a process for tracking or measuring forecasting errors been included?

Credit Management

- What is the process for dealing with “new” types of counterparties e.g., non-profits?
- Has the integration of carbon markets credit risk with credit risks of other markets been assessed?
- What are the implications on collateral requirements and margining processes?
- Have appropriate risks been included in credit scoring and limits setting?
- Have environmental transactions been included in real-time exposures?

Transaction Capture

- How is the trade capture process impacted? What additional trade attributes need to be captured?
- How do blotters, deal tickets, and trade logs need to be re-designed? What system changes are needed?
- What new products and instruments can be or will need to be created? What’s the process for participating in CERs?
- Have inter-book transfers been evaluated to prevent double-counting?
- Can internal and external reporting needs be met?
- Do confirmations or new confirmation templates need to be designed and do they require legal review?

Risk Measure & Monitor

- What new risk policies are required?
- Are new trade/trader/portfolio limits and additional monitoring required? How are they set?
- How will forward price curves, volatilities and correlations be developed?
- How will calculating/ updating/ modeling Value-at-Risk (VaR) and Cash-Flow-at-Risk (CFaR) change?
- What valuation adjustments for credit, liquidity and administrative reserves are required?
- How will the End-of-Day process change?

- What is the impact on the governance process?
- What new processes need to be defined for interaction with new entities such as registries?

Settlements & Accounting

- Has additional time for check-out and invoice validation been evaluated?
- Has reconciliation to external systems been included?
- How will retiring of allowances, certificates and credits be managed?
- How will valuing and accounting for assets and liabilities be accomplished?
- What new internal controls are required?
- How will the International Financial Reporting Standards (IFRS) impact carbon transactions?

Assessing Organizational Maturity

The four-stage Climate Change Capability Maturity Model (the “Maturity Model”) shown in Figure 3 below can assist in assessing organizational capability, or maturity, across governance, strategy, climate change risk identification, reporting and disclosure, business processes, and technology infrastructure focus areas. The Maturity Model provides a view of a range of capabilities, from “outdated” to “leading” practices. Using the dimensions of the Maturity Model relevant to specific focus areas, companies will be able to assess their current state relative to a future desired state. Implementation of the Maturity Model would include describing each level in detail so that accurate assessments can be made and a methodology and plan can be developed for achieving readiness in key focus areas as companies prepare for the emerging carbon regulations and regulatory compliance requirements.

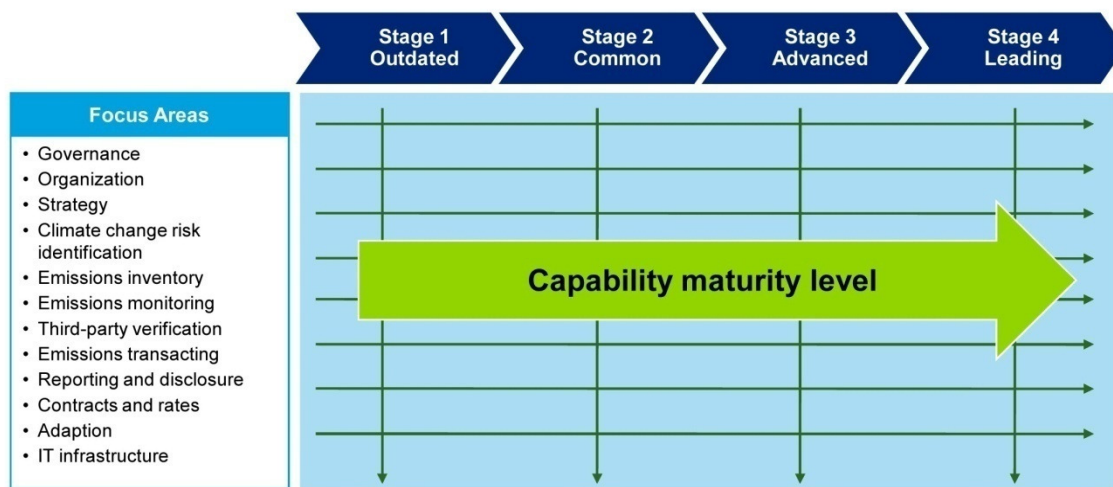


Figure 3. Climate Change Capability Maturity Model
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The primary benefit of the Maturity Model is to help focus on processes where leading practices are critical. Other non-core processes can be at company-appropriate levels. For example, an organization whose priority is on compliance can decide to have leading practices for its compliance management processes versus an organization where carbon allowance trading is the focus would choose leading practices for trading to target advanced capabilities.

Conclusion

Business processes are a key element in implementing a company's strategic response to carbon markets and climate change. Business process considerations and inquiries help refine strategy and support newer activities such as carbon trading. They also help companies focus on where to build capabilities such that they are consistently improving relative to their competition. The time it takes to implement and master new business processes or assess maturity in key focus areas should not be underestimated. With the potential for federal carbon legislation in the United States to be passed by 2013, energy companies that closely monitor impending legislation and undertake the internal readiness efforts for carbon management and trading will likely emerge as leaders amongst their peers.

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