



CRA Insights: Energy

CRA Charles River
Associates

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Reflecting on 2020: Trying times and an industry in accelerating transition

Clients and Friends,

The year 2020 was remarkable in ways that went far beyond the energy industry. Among many other reflections this year, I am grateful to have outstanding colleagues in the Energy Practice and at CRA. I have truly missed working side-by-side with them, and with you, our clients. It has been gratifying, though, to see how well we have adapted, in concert with you and almost overnight, to working remotely on important engagements.

While we were all huddled in our home offices last year, a great deal happened with the Energy Practice. I am happy (and a bit surprised in retrospect) to report that we added more members to our Practice in 2020 than at any point in our history. We have been fortunate to welcome a new team to our London office and recently opened our first office in Munich, Germany, positioning us to better serve our clients in the UK and continental Europe. We have also added new services to our portfolio, some of which are detailed in this newsletter.

We are happy to share this update, which describes representative engagements from this past year, a summary of our publications and events attended, detail on how our Practice has expanded, and some thoughts about the year ahead.

Thank you for the trust you place in us, and I look forward to being able to see many of you (in person) in the new year.

Sincerely,

Christopher Russo

Vice President and Practice Leader

A sampling of our 2020 engagements

Utility Strategy

In 2020, CRA supported numerous utilities with the development of their corporate and business unit strategies to address a rapidly changing business environment. Here are a few anonymized examples.

For a midwestern utility with electric and gas utility operations, **Jim McMahon**, **Patrick Augustine**, and **Anant Kumar** analyzed how the company would be affected under different future states of the world. We analyzed the expected performance of and risks to each operation and the company overall and then developed alternate strategies that included changes in capital spending and potential divestiture of operations.

In Europe, **Tilmann Hensel-Roth** and **Anthony Boden** supported the formulation of a new operating model for the UK thermal power generation portfolio of an international power and renewables company necessitated by changes in the market as renewable share increases.

For a western utility with electric and gas utility operations dealing with the threat of wildfires and growing electricity rates, **Jim McMahon**, **Arnie Lowenstein**, **Enrique Glotzer**, and **Zack Wu** developed a strategy as an alternative to the company's baseline to more rapidly address near-term challenges while also investing for the long term in a modern, safe, and reliable grid.

Utility Resource Planning and Decarbonization

In 2020, CRA supported numerous investor-owned and publicly owned utilities with strategy, planning, and expert testimony. This included developing resource plans for utilities considering retirements and evaluating investment opportunities with renewables, storage, carbon capture and storage, and distributed energy resources.

For **NIPSCO**, CRA continued its support of the company's generation transition strategy. **Patrick Augustine** filed testimony in three certificate of public convenience and necessity (CPCN) applications for solar and solar-plus-storage projects, with **Jeff Plewes** contributing testimony in one of the applications. Additional CPCN filings for more solar and solar-plus-storage projects are expected early this year, and CRA will continue to support NIPSCO with its public stakeholder process for the upcoming 2021 integrated resource plan (IRP) cycle.

Jim McMahon, **Patrick Augustine**, and **Anant Kumar** assisted a midwestern utility in a resource planning engagement, with carbon capture and storage (CCS) on existing coal plants being one of the primary decarbonization pathways. CRA developed CCS and alternative gas and renewable portfolio options, developed a rate forecasting model, and analyzed the economics of CCS versus other options, taking into account 45Q tax credits available to the CCS facility. CRA's work was presented to the executive leadership team and the company board. CRA experts continued to support resource planning stakeholder processes on behalf of several utilities. **Patrick Augustine** participated in stakeholder discussions on behalf of **Alliant Energy** in Iowa and supported the filing of **Interstate Power and Light's** Clean Energy Blueprint in November 2020. Mr. Augustine also supported **Wisconsin Power and Light's** application for a certificate of authority to acquire and operate six solar facilities and filed testimony in the proceeding. **Jim McMahon** and **Patrick Augustine** participated in stakeholder discussions in Oklahoma and Missouri on behalf of **Liberty Utilities** and its IRP.

Utility Grid Modernization Plans

In 2020, CRA supported numerous utilities with their grid modernization plans. CRA's support for utility grid plans includes developing the overall grid strategy, preparing technology road maps, analyzing investment costs and benefits, and providing regulatory testimony.

For the **Empire District Electric Company** (a Liberty Utilities Company), **Jim McMahon**, **Tony Du**, and **Spencer Weiser** developed a cost-benefit analysis for a planned advanced metering infrastructure (AMI) investment. This included analyzing how AMI would affect every part of the company's business, from metering to customer care. CRA also prepared regulatory testimony in that case.

Mergers and Market-Based Rates and Asset Transaction Support

We supported several utilities in Europe with various challenges. In the Czech Republic, **Anthony Boden** managed the implementation of an M&A by a global infrastructure and asset management investment firm to carve out a gas distribution asset. That engagement expanded to look at environmental, social, and governance (ESG) and sustainability as a key priority for 2020 and 2021. CRA supported a major utility as it integrated its UK businesses following one of the largest European utility mergers in recent years. The seven-plus-strong team, led by **Tilmann Hensel-Roth** and **Jan Bruland**, helped run central governance, migrate millions of customers, and project-manage the technical side of creating synergies. This project will create one of the largest suppliers in the UK.

CRA's Energy consultants continue to support clients as they participate in regulated and competitive markets in the US, and transact in the electric power M&A space. **David Hunger** and **Edo Macan** supported numerous initial, change-in-status, and triennial update market power analyses so that our clients were able to transact energy at market-based rates per Federal Energy Regulatory Commission (FERC) rules. **David Hunger** continued his work with **Goran Vojvodic**, supporting the expansion of the Western Energy Imbalance Market (EIM) by filing affidavits at the FERC on behalf of **NorthWestern Corporation** for initial market-based rate authorization and for **PacifiCorp** and **Nevada Power** for continuing market-based rates authorization in the Western EIM.

As market advisors, CRA experts supported the diligence of numerous energy infrastructure assets, including utilities, conventional power plants, and renewable generators. In these engagements, CRA supported clients in performing market price forecasts, identifying regulatory and rate-setting complexities, developing load growth and rate base outlooks, reviewing sufficiency of capital project planning for distribution investment and power production, and isolating regulatory risk and in other diligence areas that were critical to evaluating potential risk exposures of transactions. In 2020, our transaction support spanned nearly every US market area, including ISO/RTO footprints and bilateral market areas.

Market Analysis and Design

David DesLauriers, **Robert Lee**, and **Caroline Heilbrun** conducted a study for a coalition of investor-owned utilities and electric cooperatives to evaluate the costs and benefits of operating a proposed intra-hour bilateral energy trading market in the US Southeast. The proposed **Southeast Energy Exchange Market** (SEEM) is currently under regulatory consideration.

CRA expert **Herb Rakebrand** performed an analysis of production in the Rockies Basin, incorporating the impacts of new state drilling regulations as well as a potential ban on drilling on public lands. On other gas issues, CRA also supported a detailed valuation of unregulated assets, including pipeline and storage contracts as well as purchase and sales agreements, for an East Coast utility.

David Hunger and **Jordan Kwok** are supporting **Jersey Central Power & Light** as it engages with other stakeholders in consideration of a response to PJM's capacity market reform. Analysis relates to options for departing the PJM capacity market, and support has included cost modeling, consideration of nonquantitative factors, potential procurement approaches outside the capacity market environment, and associated challenges (e.g., mitigation of market power) that would accompany such approaches.

Regulatory and Litigation Support

Seabron Adamson was active in multiple litigation and arbitration matters related to renewable energy projects, including civil litigation in Minnesota over a set of community solar projects and a federal district court matter involving a wind project. Internationally, Mr. Adamson was retained in an ICC arbitration involving a solar project in Asia.

Seabron Adamson and **Christian Jeffery**, collaborating with a team from CRA's European Competition Practice, worked on a gas price review matter that combined competition and price-review issues related to a gas contract.

Seabron Adamson and **Derya Eryilmaz** worked with outside counsel for a major North American energy company in a Delaware Superior Court dispute related to the acquisition of various generation assets. This resulted in a successful settlement for CRA's client.

David DesLauriers and **Jordan Kwok** were engaged to provide expert advice and testimony for the Alberta Utilities Commission's Electric Distribution System Inquiry on behalf of the **Consumers Coalition of Alberta**. The inquiry was directed at mapping and evaluating key issues related to the future of the electric distribution grid to aid in developing the necessary regulatory framework to accommodate the evolution of the electric system and related emerging technologies.

CRA experts **Anant Kumar**, **David DesLauriers**, and **Jim McMahon** were retained by **Platte River Power Authority** in a FERC transmission rate-making case. The case focused on the reasonableness of an increase in a flex reserve service charge that the utility's balancing authority proposed as a result of higher wind energy on the system. CRA used its expertise to compile a statement of facts on the complex flexibility reserve issue and helped develop arguments to support the client's filing with the Commission. CRA's work helped the client enter into a settlement on the matter.

Christian Jeffery, representing a European oil and gas E&P company, was appointed as an expert witness in a confidential commercial dispute. The dispute centers around the commerciality of a potential oilfield development. CRA is providing analysis and testimony regarding the economic viability of the project at the valuation date.

Simon Ede was appointed as a determining expert in a dispute between a power plant owner and an equipment supplier over lost market revenues resulting from reduced plant output caused by faulty equipment. CRA analyzed the submissions by each party, provided a determination of fault, and allocated damages.

Looking forward to 2021 and changes in store

Inasmuch as 2020 was challenging and transformative in how we live day-to-day, expected transitions in the energy industry appear to have accelerated or even leapt forward. With political changes afoot and unique opportunities stemming from the world's emergence from the COVID-19 pandemic, here are some of the major storylines we will be following in 2021 and beyond:

- What climate policies will result from the recent seismic shift in the **political landscape in the United States**? How will the policies align and interact with **decarbonization efforts** in the corporate world, across states, and internationally, and how will they be tied to actions targeting economic relief and infrastructure spending following the COVID crisis? Will there be legislated economy-wide programs that employ markets or carbon pricing, or will companies see a myriad of sector-specific regulations affecting their business? Climate policy can create both risks and opportunities, with outcomes for individual companies highly dependent on the type and design of the enacted policies. CRA consultants can evaluate policy scenarios to determine the potential impacts on industries and individual firms. This can inform strategic decision-making and support efforts to better shape policy outcomes.
- The new joint team in Europe is, in 2021, tracking developments ahead of, during, and after **COP-26**, to be hosted in Glasgow, UK. We will be focusing in particular on energy systems, innovation, and financing because of the impetus that COP-26 is likely to provide to the sector. Follow us on [LinkedIn](#) for updates throughout the year.
- What role will emerging technologies like **battery energy storage** and **hydrogen** play in enabling deep decarbonization in the power and non-power sectors? How far can Li-ion battery energy storage go in meeting longer-duration storage needs, and at what point will thermal resources using green hydrogen make economic sense? As states, cities, and potentially the federal government announce deep decarbonization goals, there is an emerging need to address such questions as part of a utility's long-term planning process. CRA is working with several clients to analyze the trade-offs between various resource strategies and develop perspectives on cost and operating assumptions for long-duration battery energy storage and green hydrogen.
- How will **resource adequacy analysis** approaches change as the power markets transition more heavily to renewables? Historically, resource adequacy requirements have centered on summer peak reserve margin targets to ensure that sufficient generation is available when loads are highest. However, as thermal resources retire and intermittent generation increases, an emphasis on seasonal reserve margins and short-term operating reserve requirements is emerging. Clients are increasingly looking to assess the need for flexible resources and quantify the value of ancillary services in light of the intermittency of renewables. CRA has been developing tools and working with clients to address such complex resource adequacy issues on seasonal, hourly, and sub-hourly time frames.
- With a Democrat-led FERC and an industry reeling from demand disruption from the COVID crisis, how will the **US gas regulatory environment** evolve? Will the Commission revisit the pipeline certificate policy and require more analysis related to market need and emissions, thus considerably hampering pipeline expansion? On the gas utility front, will state climate initiatives affect resource planning and ultimately the underlying gas utility business model? How will the Biden administration's policies disrupt production and transportation relative to disruptions in demand, what will be the price impacts, and where are the transitional market opportunities?

Select publications

Continuing a practice that began in 2019, the CRA Energy Practice issued a periodic Utility & Energy Litigation Digest. We hope this will be a valuable resource for our clients that helps them stay up to date on trending utility and energy litigation matters across North America. The most recent Digest [can be found here](#).

Energy Practice economists and affiliated senior consultants continue to publish white papers and articles for our clients in academic and industry journals and trade publications and to produce *CRA Insights* pieces. [Click here for the full listing](#) of articles, papers, and newsletters from 2020, 2021, and our archive. Below, we highlight several publications.

New regulatory paradigms for the UK retail energy market

Simon Ede, Laura Sochat, Will Morley, Rebecca Rowden

A Q&A with Donald Santa

Herb Rakebrand

Southeast utilities give NC, SC regulators preview of energy exchange market

David DesLauriers, Robert J. Lee

Market-based rates in the Western energy imbalance and extended day-ahead markets

(Energy Bar Association's *EBA Brief*, Fall 2020, Vol. 1, Issue 2)

David E. Hunger, Edo Macan, Goran Vojvodic, Alexia Dupuis

The impact of COVID-19 reactions on electric load: An update after six months

Robert Kaineg, Jordan Kwok

Chemical sector M&A: 'Back to fundamentals'

Arnold J. Lowenstein, Zack Wu

Understanding and communicating the corporate "value at stake" from climate risk

Simon Ede, Enrique Glotzer, Kitty Stacpoole

PJM's Capacity Market: Where are we now?

Patrick Augustine, David E. Hunger, Jordan Kwok, Jeff Plewes

Capital impact of COVID-19 on electric power sector – Beyond reading tea leaves

Anant Kumar, Enrique Glotzer

Alberta Utilities Commission – Report on Combined Module 2 and 3 Topics

David DesLauriers, Jordan Kwok

Energy and Commodity Arbitrations

Christian Jeffery

Assessment of the COVID-19 pandemic effect on regional electricity generation mix in NYISO, MISO, and PJM markets

(*The Electricity Journal*, Vol. 33, Issue 7, August/September 2020)

Derya Eryilmaz, Margarita Patria

Utilities are not immune this time

Quan Li, Neal Kissel, Jim McMahon

Disruptive sustainability: Implications of the UK Plastic Packaging Tax

Simon Ede, Yassir Ahmed, Kitty Stacpoole

Push back on plastic: The UK Plastic Packaging Tax at a glance

Simon Ede, Yassir Ahmed

Utility portfolio planning for a decarbonized future

Anant Kumar, Patrick Augustine

An update on the impact of COVID-19 reactions on electric load

Jordan Kwok, Robert Kaineg

The EU carbon border adjustment: Our initial views

Simon Ede, Knight Sukthaworn

A standardized cost recovery approach for utilities impacted by COVID-19

Jim McMahon

Natural Gas Utilities 2.0

Herb Rakebrand

An early view of the impact of COVID-19 reactions on electric load

Jordan Kwok, Robert Kaineg

Order No. 841 – Planning for next steps

David DesLauriers, Caroline Heilbrun

What next for the UK retail energy cap? An assessment of competition indicators

Simon Ede, Laura Sochat, Rebecca Rowden

Energy storage as a transmission asset in regional markets

Energy Law 360, January 2020

Derya Eryilmaz, Caroline Heilbrun

Utility resource implications for a 100% clean energy future

Patrick Augustine, Anant Kumar, Clare Everts

Speaking engagements and conferences

Though it was an unusual year for in-person events, Energy Practice economists and experts were able to engage in conferences and seminars/webinars in 2020. We also hosted several events for clients and the energy community.

Patrick Augustine was invited to testify before the Indiana state legislature's 21st Century Energy Task Force and presented on the topic of power generation costs in September 2020.

Jim McMahon and **Patrick Augustine** presented at the EUCI Integrated Resource Planning Summit on “Addressing Decarbonization in Resource and Strategic Planning.” They presented the evolving framework for utility planning under future states of the world that require significant decarbonization and offered a case study based on CRA client work in the areas of generation portfolio modeling and corporate financial performance analysis.

In May, **David DesLauriers** led a two-day virtual course on the topic of FERC electric transmission ratemaking. Attendees learned the fundamentals of federal transmission rate regulation and cost-of-service rate setting as applied today. They also explored how important FERC initiatives can affect transmission rates and service in the future. CRA will be leading a **follow-up training session** on this topic in May 2021.

In October, **David DesLauriers** moderated the General Session of the Energy Bar Association's 2020 Fall Forum entitled “COVID-19: Impacts to the Utilities and Energy Sectors – Today and the Future.” It explored the more significant impacts of COVID-19 on the energy and utility sector and focused on potential implications for the sector's future. Discussion areas included load impacts and economic consequences to utilities, regulatory responses (shorter- and longer-term), consumer-side adjustments, and fuel and supply chain price changes.

Derya Eryilmaz spoke at Law Seminars International's Renewable Energy in the Midwest conference, participating in a panel on the topic of “Regional Coordination of Markets and Grid Operations to Accommodate the Transition to Greater Reliance on Renewables.”

New colleagues and promotions

In 2020, we were pleased to announce the promotion of **Patrick Augustine** to vice president. Mr. Augustine has been with CRA since 2015 and specializes in market analysis and strategy development within the electric utility and power market sectors. Mr. Augustine manages and performs power market assessments and other economic analyses in support of utilities, project developers, investors, and lenders in their energy asset development, financing, and integrated resource planning efforts. Mr. Augustine is a frequent writer and presenter in the power market space and has testified before multiple state utility commissions on various electric resource planning and power market analysis topics.

In the summer of 2020, we were excited to **announce the significant expansion** of our team at CRA's London office, adding new talent and a deeper roster to our continental offerings. **Tilmann Hensel-Roth** joined CRA together with colleagues, expanding the London Energy Practice's diverse, multilingual and experienced team of energy experts with experience across the energy value chain and with notable engagement experience in power generation, energy distribution, and trading as well as retail markets in Europe. Mr. Hensel-Roth advises clients on corporate strategy, large-scale transformation and restructuring, M&A and post-merger integration, value optimization, cost reduction and E2E process redesign, and operational excellence. Before joining CRA, Mr. Hensel-Roth was Partner and Managing Director at innogy Consulting, where he led the UK business and team, overseeing all client accounts and engagements.

We also recently welcomed two new colleagues to our senior team. **David Walls** joined us from the energy practice at Guidehouse/Navigant Consulting, where he was the leader of the strategy and operations practice team. Mr. Walls advises clients on energy industry transformation, business growth strategies, emerging technologies, and business strategy, with a focus on clean energy, renewables, decarbonization, and grid modernization. He has worked with utilities across North America and internationally, and he also works with equipment manufacturers, investors, and

government institutions, including the US Department of Energy, NYSERDA, and the California Energy Commission, to assess and position for power industry policy and regulatory changes, new technologies, and emerging market opportunities.

Kate Kapletova joined the Munich office in November as the first member of the Energy Practice in Germany, which marks the start of the expansion of the Practice in continental Europe. Ms. Kapletova comes from innogy Consulting, where she worked in Europe and the Middle East combining strategic and practical implementation work across the full energy utility value chain. She will be working closely with other colleagues and the London team to grow the business in the region, focusing on markets and trading, value delivery following asset acquisition, and practical strategy formulation for utilities and expanding into the segment of regional utilities and “Stadtwerke” in Germany.

Additionally, **Enrique Glotzer** has relocated from New York City to the London office to collaborate with the newly expanded team in supporting clients across energy, financial, and industrial sectors to develop strategies to successfully navigate the ongoing energy transition and drive new growth and investment opportunities in sustainability and clean energy technology adoption.

Gary Vicinus joined our team as a senior consultant in North America. Mr. Vicinus brings a wide range of experience to CRA that includes strategic planning, market analyses, environmental planning and stakeholder processes. He works frequently with investors and publicly owned utilities.

About CRA's Energy Practice

Charles River Associates is a leading global consulting firm that offers strategic, economic, and financial expertise to major corporations and other businesses around the world. CRA's Energy Practice provides services to a wide range of industry clients, including utilities, ISOs, RTOs, large customers, and investors. The Energy Practice has offices in Boston, New York City, Washington, DC, Toronto, London, and Munich. Learn more at www.crai.com/energy-practice.

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