
Proposal Regarding Incentive Regulation in Quebec

Prepared for Le Regroupement national des conseils
régionaux de l'environnement du Québec

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CONTENTS

- 1. INTRODUCTION 1
- 2. OVERVIEW OF INCENTIVE REGULATION 2
 - 2.1. Distribution utilities 2
 - 2.2. Transmission utilities 5
 - 2.3. Tasks 7
- 3. ABOUT SYNAPSE 7
- 4. QUALIFICATIONS AND EXPERIENCE 8
 - 4.1. Key Personnel 9
 - 4.2. Relevant Project Descriptions 11
- 5. BUDGET 15

1. INTRODUCTION

The Régie de l'énergie du Québec (the Régie) has launched a proceeding to establish incentive regulation regimes for both Hydro-Québec Distribution (HQD) and Hydro-Québec TransÉnergie (HQT). Synapse Energy Economics, Inc. (Synapse) proposes to provide technical expertise to Le Regroupement national des conseils régionaux de l'environnement du Québec (RNCREQ) in Phase 1 of this proceeding regarding the design of incentive regulation mechanism(s) (MRI).

Our project team brings considerable technical and policy expertise in both incentive regulation and environmental issues to the project, including:

- A project manager with deep knowledge of performance regulation. Tim Woolf is a nationally recognized leader in clean energy policies, programs, and incentives. He has analyzed alternative ratemaking mechanisms—including incentive regulation, performance metrics, and decoupling—both as an expert consultant and while serving as a Commissioner for the Massachusetts Department of Public Utilities (DPU). Mr. Woolf is also an author of *Performance-Based Regulation in a Restructured Electric Industry*, prepared for the National Association of Regulatory Utility Commissioners (NARUC).
- Experience assessing alternative ratemaking mechanisms in a wide range of jurisdictions. Recent projects led by project team members include evaluating decoupling and PBR issues on behalf of the Maine Office of the Public Advocate (2014); designing performance incentives in Hawaii to encourage utilities to adequately plan for investments in cost-effective clean energy infrastructure, provide safe and reliable service, expand customer options and control, improve customer service, and adequately support innovative resources such as energy efficiency, distributed generation, and storage (2015); evaluating performance-based regulation and alternative rate designs for the Natural Resources Defense Council in the New York, Reforming the Energy Vision docket (2015).
- Recently authoring *Utility Performance Incentive Mechanisms: A Handbook for Regulators*. The handbook, prepared on behalf of the Western Interstate Energy Board, describes how regulators can guide utility performance through the use of performance incentive mechanisms.
- Being selected by the Lawrence Berkeley National Laboratory as one of two firms in the United States (Pacific Economics Group is the other firm) to author a technical report on incentive regulation in a high distributed energy resource (DER) future.



2. OVERVIEW OF INCENTIVE REGULATION

Numerous regulators worldwide have adopted incentive regulation¹ in order to provide more direct financial incentives for utilities to reduce costs and achieve other desired outcomes. This cost containment incentive is primarily provided by establishing a multiyear rate plan characterized by a price cap or a revenue cap. If the utility succeeds in keeping its costs below its allowed costs or revenues for the duration of the rate plan, it keeps a portion of the excess revenues. In addition, performance incentive mechanisms (PIMs) with associated financial rewards or penalties may be established in order to encourage the utility to achieve other outcomes, such as energy reductions through energy efficiency investments.

In accordance with Quebec law and the Régie's recent decision, an incentive regulation mechanism must be established for Hydro-Québec that achieves ongoing improvement in performance and service quality, cost reductions that are beneficial to both consumers and the utilities, and streamlining of the regulatory process.² Synapse proposes to assist RNCREQ in this proceeding by providing expert advice and testimony on the design of an incentive regulation mechanism that achieves environmental goals while protecting consumers. The design of an incentive regulation mechanism can be thought of as two distinct parts, each with multiple components: (1) a multiyear rate plan (and the associated revenue, or price, cap mechanism), and (2) performance incentive mechanisms. Below we address these two parts in turn and identify key issues for environmental advocates.

The application of these concepts often differs for a distribution utility and for a transmission utility. These are addressed in the following sections.

2.1. Distribution utilities

2.1.1. Multiyear Rate Plans

Common Characteristics

Although the details of incentive regulation mechanisms vary from region to region, they are generally centered around a multiyear rate plan. The rate plan typically contains the following elements:

1. A fixed time period between rate cases that is designed to be long enough to provide the utility with incentives to reduce operating costs and keep the operational savings between rate cases.
2. A price cap (or a revenue cap) that is used to set prices during the rate plan.

¹ Incentive regulation is also called performance-based regulation.

² The Régie will hear arguments in September regarding whether or not the objectives set out in s. 48.1 of the Act are exclusive. Its decision will of course affect the scope of our work.

3. Automatic adjustments to the price (or revenue) cap that are designed to account for expected cost changes between rate cases. These “attrition relief mechanisms” (ARMs) may include automatic increases to account for inflation, coupled with automatic reductions to encourage productivity improvements. In the United States, many jurisdictions have adopted the “RPI – X” formula, where RPI is the retail price index and “X” is a productivity factor.
4. The adoption of cost trackers to allow the utility to recover certain types of costs outside of the price (or revenue) cap. Trackers are most often applied to costs that are volatile and beyond a utility’s control. Some jurisdictions also allow trackers for major capital expenditures, because these costs are large and lumpy and may therefore be difficult to accommodate in a fixed price (or revenue) cap.
5. Earnings sharing mechanisms that ensure that the utility’s earned profits are neither excessive nor insufficient, while passing along some of the efficiency gains to customers. An earnings sharing mechanism was adopted by the Régie in decision D-2014-034, in which all under-earnings are borne by the utility, but over-earnings are split with consumers.³

Key Considerations

There are numerous ways to design each of the above elements, with important ramifications for both consumers and the environment. Synapse proposes to address the design of the multiyear rate plan in a manner that pays particular attention to the concerns of Quebec NGOs representing environmental, sustainable development and low income consumer interests. For example, while all types of ratepayers have similar interests with respect to the time-period between rate cases and earnings sharing mechanisms are likely to be shared by, environmental and consumer advocates may bring a unique perspective regarding decoupling mechanisms, attrition relief mechanisms, and cost trackers. Furthermore, performance incentive mechanisms can be crafted to incent specific outcomes affecting sustainable development (e.g. demand response) and low-income consumer interests (e.g. reductions in customer bills and providing tools for customers to manage their bills), as described below.

- **Revenue decoupling mechanisms:** “Decoupling”, in American regulatory jargon, refers to the delinking of a utility’s profits with sales volumes. Full revenue decoupling is generally accomplished through setting the utility’s allowed revenues, and then adjusting rates to meet the revenue target. Through such a mechanism, the utility collects no more and no less than the revenues that were approved in its most recent rate case.

Although not a component of all multiyear rate plans, decoupling mechanisms help to remove a utility’s financial incentives against energy efficiency, conservation, and other resources that reduce sales (such as distributed generation). However, for decoupling to succeed, it is

³ The mechanism adopted permits the utilities to retain 50% of the first 100 basis points of excess return, and 25% of any additional excess, but its application is currently suspended.

important that customers are also protected. Protections include establishment of appropriate revenue targets, a cap on annual decoupling adjustments to prevent large changes in customer bills, potential adjustments to utility return on equity to account for reduced risk, and utility commitments related to energy efficiency and distributed resources.

- **Attrition relief mechanisms and productivity factors:** Attrition relief mechanisms are often designed to increase allowed revenues according to an index, such as the Consumer Price Index or according to industry inflation rates. Productivity factors may be subtracted from the indexed inflation rates to provide incentives to increase productivity. Capital expenditures may be incorporated or excluded from the attrition relief mechanism.

While attrition relief mechanisms and productivity factors may be favorable from a consumer protection perspective, the establishment of such a mechanism should also account for necessary investments to support public interests goals. To support investments in infrastructure aligned with policy goals, some jurisdictions have adopted special capital recovery mechanisms outside of the attrition relief mechanism.⁴

- **Trackers:** Tracking mechanisms should be adopted only cautiously, as placing certain types of costs into trackers eliminates the utility's incentive to optimize those costs and transfers the risks associated with those costs to ratepayers. Trackers can help encourage certain types of investments deemed to be in the public interest, but they can also incent investment in large, capital intensive projects.

2.1.2. Performance Incentive Mechanisms

Historically, performance incentives were incorporated into incentive regulation mechanisms to prevent cost-cutting efforts from resulting in degradation of reliability, customer service, or safety. Increasingly, however, performance incentive mechanisms are being developed to address emerging performance areas such as system efficiency, customer engagement, network support services, and environmental goals.

Performance targets that may help to achieve environmental and consumer protection objectives include:

- Peak load reductions (enabled by demand response)
- Customer participation in innovative rate options (e.g., peak time rebates)
- Customer awareness and use of web portal for viewing usage information
- Energy affordability, particularly for low-income customers

While performance incentive mechanisms provide a powerful tool for encouraging utilities to achieve policy goals, they must be designed carefully to achieve the desired results. For example, metrics must

⁴ See, for example, Hawaii's Renewable Energy Infrastructure Surcharge.

be defined precisely in order to avoid contention and to facilitate comparisons over time and across jurisdictions. Metrics must also be largely free from arbitrary influence, or employ econometric techniques to control for exogenous variables. Performance targets should be set to balance the costs of achieving the target with the benefits to customers. Per the legislation, performance targets should also be designed to encourage continual performance improvement.

Synapse proposes to suggest performance incentive mechanisms that could address a number of desired utility performance outcomes, with a particular emphasis on environmental and social goals. Our expertise in performance incentive mechanism design includes authoring a report titled *Utility Performance Incentive Mechanisms: A Handbook for Regulators*,⁵ which identifies many of the metrics and data sources available to measure utility performance, while discussing financial incentive design considerations.

2.1.3. Off-grid communities

Quebec's off-grid communities have a cost structure entirely different from the integrated grid. Designing mechanisms to provide the right incentives for these off-grid communities represents a unique challenge. Such incentives might include, for example, incentives to:

- Improve generation efficiency,
- Reduce losses,
- Reduce operating costs,
- Promote consumer efficiency,
- Defer capital investments in new diesel equipment, and
- Develop or purchase renewable generation to reduce diesel use.

2.2. Transmission utilities

2.2.1. Multiyear Rate Plans

Hydro-Québec TransÉnergie manages power flows over a vast system of transmission lines and maintains interconnections with neighboring provinces and states, allowing for the import and export of

⁵ http://www.synapse-energy.com/sites/default/files/Utility%20Performance%20Incentive%20Mechanisms%2014-098_0.pdf

energy. In 2007, Hydro-Québec TransÉnergie was designated by the Régie as the reliability coordinator for Québec, under which it must meet certain mandatory reliability standards.⁶

PBR plans for transmission utilities have been adopted in a number of countries, including the UK, the Netherlands, and Norway. In each jurisdiction, the goal is to achieve the appropriate level of transmission investment to address reliability, economic, and public policy concerns, while maintaining reasonable rates. As with distribution utilities, transmission PBR schemes are often centered around multiyear rate plans, with many of the same design considerations.

As with PBR for distribution utilities, new incentive regulation approaches are being investigated to try to shift the focus of the utility more toward the provision of outputs, as opposed to investments in rate base. For example, the United Kingdom has shifted from an RPI-X price control to one in which revenues are more closely tied to meeting specific performance targets.

2.2.2. Performance Incentive Mechanisms

Assessing the performance of transmission utilities requires a different set of metrics than for distribution utilities. Although reliability is a focal point of the utility's mandate, it should not be emphasized to the exclusion of other social goals, such as cost control and facilitation of innovative resources. In the United States, an effort is underway to develop common metrics for measuring performance of transmission utilities and regional transmission operators (RTOs). A 2014 report from the Federal Energy Regulatory Commission Staff⁷ identified numerous metrics to enable regulators to better monitor utility performance, including:

- Effectiveness of the planning study process:
 - Frequency of studies
 - Incorporation of stakeholder sensitivity analyses
 - Analysis of non-transmission alternatives
- Processing time for new interconnection requests
- Load forecasting accuracy
- Demand response provision of ancillary services
- Administrative costs

⁶ Not all reliability standards that have been adopted have yet gone into effect. See http://www.hydroquebec.com/transenergie/reliability/liste_normes.html

⁷ Federal Energy Regulatory Commission Staff, *Common Metrics*. August 26, 2014. Available at <http://www.ferc.gov/legal/staff-reports/2014/AD14-15-performance-metrics.pdf>

Synapse proposes to review these and other performance metrics in order to suggest metrics that would be appropriate for HQT. Again, our emphasis will be on the attainment of the objectives set out in the Act as well as environmental and social goals.

2.3. Tasks

We propose to conduct all the tasks necessary to participate fully in this proceeding. At this time, we expect the tasks to include (a) developing memos that outline the key issues, options and considerations; (b) participating in discussions with the other experts and, to a certain extent, with other intervenors; (c) preparing testimony to be filed as evidence; (d) preparing responses to information requests; and (e) preparing for and attending the hearings.

We invite the RNCREQ to formulate a mandate, based on the present proposal, in order to define the required scope of work. We also note that while we will rely on RNCREQ for certain background information and context, we will maintain our independence throughout the proceeding. All analyses and recommendations will be made based on our objective review and analysis of the facts at hand.

3. ABOUT SYNAPSE

Synapse Energy Economics is a research and consulting firm specializing in energy, economic, and environmental topics. Since its inception in 1996, Synapse has grown to become a leader in providing rigorous analysis of the electric power sector for public interest and governmental clients.

Synapse's staff of 30 includes experts in energy and environmental economics, resource planning, electricity dispatch and economic modeling, energy efficiency, renewable energy, transmission and distribution, rate design and cost allocation, risk management, benefit-cost analysis, environmental compliance, climate science, and both regulated and competitive electricity and natural gas markets. Several of our senior-level staff members have more than 30 years of experience in the economics, regulation, and deregulation of the electricity and natural gas sectors. They have held positions as regulators, economists, and utility commission and ISO staff.

Services provided by Synapse include economic and technical analyses, regulatory support, research and report writing, policy analysis and development, representation in stakeholder committees, facilitation, trainings, development of analytical tools, and expert witness services. Synapse is committed to the idea that robust, transparent analyses can help to inform better policy and planning decisions. Many of our clients seek out our experience and expertise to help them participate effectively in planning, regulatory, and litigated cases, and other forums for public involvement and decision making.

Synapse's clients include public utility commissions throughout the United States and Canada, offices of consumer advocates, attorneys general, environmental organizations, foundations, governmental associations, public interest groups, and federal clients such as the U.S. Environmental Protection



Agency and the Department of Justice. Our work for international clients has included projects for the United Nations Framework Convention on Climate Change, the Global Environment Facility, and the International Joint Commission, among others.

Synapse worked on behalf of the RNCREQ in 2003 reviewing the Hydro Quebec energy efficiency plans (Docket R-3473-01). We have worked for the Nova Scotia Utility and Review Board for many years on a variety of issues, with an emphasis on integrated resource planning. Synapse is currently working for the Ontario Energy Board reviewing the DSM plans submitted by the gas utilities.

4. QUALIFICATIONS AND EXPERIENCE

Synapse has considerable experience assessing and developing alternative ratemaking mechanisms to encourage utilities to seek operational efficiencies and meet public policy goals. We provide policy guidance regarding alternative ratemaking mechanisms such as incentive regulation and decoupling, and assist in the development of appropriate utility performance incentives. The scope of our work in this area includes:

- Evaluating alternative ratemaking mechanisms in ratemaking proceedings and assessing whether they are, or are not, appropriate;
- Ensuring that regulated utilities are provided with meaningful financial incentives to reduce costs and increase efficiency;
- Assessing and designing performance metrics and incentives to encourage utilities to provide safe and reliable delivery of service, maintain (or improve) responsive customer service, address the needs of low-income customers, and adequately support innovative resources such as energy efficiency and distributed generation; and
- Providing technical and policy support regarding revenue decoupling mechanisms to ensure that they sufficiently remove the financial disincentives that utilities face regarding demand-side resources, while protecting consumers.

Synapse's project team has been engaged by numerous clients to provide consulting expertise on incentive regulation, particularly as it relates to clean energy issues.

- Synapse's project manager, Tim Woolf, is a nationally recognized leader in clean energy policies, programs, and incentives. He has analyzed alternative ratemaking mechanisms—including incentive regulation, performance metrics, and decoupling—both as an expert consultant and while serving as a Commissioner for the Massachusetts Department of Public Utilities (DPU). Mr. Woolf is also the author of *Performance-Based Regulation in a Restructured Electric Industry*, prepared for the National Association of Regulatory Utility Commissioners (NARUC).
- Synapse was one of two firms across the United States (along with Pacific Energy Group) selected by the Lawrence Berkeley National Laboratory to author a technical report on incentive regulation in a high distributed energy resource (DER) future. The report will



explain how to incorporate performance-based metrics focused on DER; present key subtopics from the perspective of both the electric utility and the customer/broader public interest; describe a taxonomy of issues to consider in determining whether to implement some elements of incentive regulation or comprehensive incentive regulation; and describe criteria state utility commissions can consider to evaluate whether to adopt some form of incentive regulation in the context of a high DER future.

- We recently prepared a report for U.S. and Canadian regulators that describes how regulators can guide and improve utility performance through the use of performance metrics or through performance incentive mechanisms. The report identifies many of the metrics and performance incentives that regulators have used to monitor and evaluate utility performance, as well as emerging metrics and incentives that are being discussed in jurisdictions facing new issues and challenges, such as the integration of distributed energy resources. The report also provides a set of principles and recommendations for regulators based on Synapse’s review of the large amount of literature on these topics and lessons learned from case studies.
- Other recent projects include:
 - Evaluating decoupling and PBR issues on behalf of the Maine Office of the Public Advocate (2014)
 - Designing performance incentives in Hawaii to encourage utilities to adequately plan for investments in cost-effective clean energy infrastructure, provide safe and reliable service, expand customer options and control, improve customer service, and adequately support innovative resources such as energy efficiency, distributed generation, and storage
 - Providing expert analysis of energy efficiency performance standards in Arkansas, Colorado, Massachusetts, Nevada, Rhode Island, and several other states
 - Leading an analysis for the Massachusetts Department of Public Utilities focused on regulatory models to support all aspects of grid modernization in Massachusetts

Below, we provide bios for Mr. Woolf and other Synapse staff who have expertise in issues related to alternative ratemaking and descriptions of our ongoing and recent work in this area.

4.1. Key Personnel

2.2.3. Tim Woolf, Vice President

Tim Woolf has more than 30 years of experience analyzing technical and economic aspects of energy and environmental issues. Before returning to Synapse in 2011, he served four years as a commissioner at the Massachusetts Department of Public Utilities (DPU), where he played a leading role in developing the Commonwealth’s aggressive clean energy policies.



Mr. Woolf's primary areas of focus include electricity industry regulation and planning, energy efficiency program design and policy analysis, technical and economic analyses of electricity systems, renewable resource technologies and policies, clean air regulations and policies, and many aspects of consumer and environmental protection.

During his tenure as a commissioner at the Massachusetts DPU (2007 to 2011), he oversaw a dramatic expansion of ratepayer-funded energy efficiency programs, the implementation of decoupled rates for electric and gas companies, the promulgation of net metering regulations, an assessment of smart grid pilot programs, and the review of long-term contracts for renewable energy. He also served as the President of the New England Conference of Public Utility Commissioners from 2009 to 2010, a board member on the Energy Facilities Siting Board from 2007 to 2010, and a co-chair on the Utility Motivation Work Group of the State Energy Efficiency Action Network from 2009 to 2010.

A large portion of Mr. Woolf's career has been dedicated to the review and development of energy efficiency programs and regulatory policies. His current work encompasses all aspects of energy efficiency program planning and implementation, including program design, avoided cost analyses, cost-benefit analyses, cost recovery, decoupling, utility performance incentives, integrated resource planning, and other relevant regulatory policies.

Mr. Woolf has testified as an expert witness in more than 45 state regulatory proceedings, and has authored more than 60 reports on electricity industry regulation and restructuring. He testified before the Regie in 2003 on Hydro Quebec's energy efficiency plan. He represents clients in collaboratives, task forces, and settlement negotiations, and has published articles on electric utility regulation in *Energy Policy*, *Public Utilities Fortnightly*, *The Electricity Journal*, *Local Environment*, *Utilities Policy*, *Energy and Environment*, and *The Review of European Community and Environmental Law*.

Mr. Woolf holds an MBA from Boston University, a Diploma in Economics from the London School of Economics, and a BS in Mechanical Engineering and a BA in English from Tufts University.

2.2.4. Melissa Whited, Senior Associate

Melissa Whited specializes in issues related to utility regulation, distributed energy resources, and the water-energy nexus. Much of her work focuses on alternative regulatory models to respond to fundamental changes in the electricity landscape spurred by declining demand, new technologies, environmental policies, and the integration of large amounts of renewable energy. Ms. Whited consults on the tools to effectively address this shift, including utility performance incentives, revenue decoupling mechanisms for energy efficiency, innovative demand response programs, and alternative ratemaking.

Recently, Ms. Whited was integrally involved in the development of a benefit-cost analysis framework for distributed energy resources within the context of New York's "Reforming the Energy Vision" proceeding. Her other recent work includes consulting on decoupling cases in Maine, Hawaii, and Nevada; conducting a comparative analysis of demand response programs across the United States; analyzing experiences with performance incentives for utilities; and evaluating proposals for time-



varying rates in the Northeast. Ms. Whited holds two master's degrees from the University of Wisconsin: an MA in agricultural and applied economics, and an MS in environment and resources.

2.2.5. Alice Napoleon, Senior Associate

Alice Napoleon conducts economic and policy analysis of electric systems and emissions regulations. She researches demographic and economic data, federal and state regulations, and rulemakings and legal precedent; writes reports, discovery questions and responses, and expert testimony; and conducts analysis in support of testimony. Her most recent work has focused on review of energy efficiency programs, encompassing program design, administration, budgeting, cost recovery, ratemaking, marketing, and cost-benefit analyses. In addition to strong analytical skills, Ms. Napoleon has expertise and extensive experience with facilitating collaborative stakeholder processes.

In collaboration with the Industrial Energy Analysis group of Lawrence Berkeley National Laboratory, she is currently managing the development of a toolkit for energy efficiency program administrators to incorporate the U.S. Department of Energy's Superior Energy Performance™ (SEP) into their portfolios. Ms. Napoleon has provided extensive and ongoing expert analysis and support for the State of New Jersey regarding its state- and utility-administered residential, low-income, commercial, and industrial energy efficiency and combined heat and power programs. Ms. Napoleon conducted extensive research on current low-income electric energy efficiency program efforts in U.S. states and submitted testimony regarding administration of low-income energy efficiency services in Nova Scotia.

Ms. Napoleon previously worked at Resource Insight, Inc. where she supported investigations of electric, gas, steam, and water resource issues, primarily in the context of reviews by state utility regulatory commissions. She holds an MA in Public Administration from the University of Massachusetts at Amherst and a BA in Economics from Rutgers University.

4.2. Relevant Project Descriptions

The following project descriptions represent a sample of our ongoing and recent work that is related to performance-based ratemaking.

Performance Incentives for Utilities

Client: Western Interstate Energy Board

Synapse prepared a report for the Western Interstate Energy Board that describes how regulators can guide and improve utility performance through the use of performance metrics or through performance incentive mechanisms. From reliability and safety standards to customer engagement, these tools have been widely used and are evolving to provide regulators with new means of ensuring that utilities' incentives are aligned with the public interest. The report identifies many of the metrics and performance incentives that regulators have used to monitor and evaluate utility performance, as well as emerging metrics and incentives that are being discussed in jurisdictions facing new issues and challenges, such as the integration of distributed energy resources. The report also provides a set of principles and recommendations for regulators based on Synapse's review of the large amount of literature on these topics and lessons learned from case studies. Project completed March 2015.



Performance-Based Regulation in a High Distributed Energy Resources Future

Client: Lawrence Berkeley National Laboratory

Lawrence Berkeley National Laboratory (LBNL) is preparing a series of technical reports on Future Electric Utility Regulation, which will examine issues related to incremental and fundamental changes to electric industry regulation in a future with high distributed energy resource (DER) levels. Synapse is providing research and analysis to support LBNL in producing a technical report on performance-based regulation in a high DER future. The report will: summarize the full suite of mechanisms used in various types of PBR; compare ratemaking and regulation of utilities under cost of service versus PBR paradigms; explain how to incorporate performance-based metrics focused on DER; present key subtopics from the perspective of both the electric utility and the customer/broader public interest; describe a taxonomy of issues to consider in determining whether to implement some elements of PBR or comprehensive PBR; and describe criteria state utility commissions can consider to evaluate whether to adopt some form of PBR in the context of a high DER future. Project ongoing.

Support for NY REV Track 2: Changes to Regulatory Designs and Incentives Structures

Client: Natural Resources Defense Council

The New York Public Service Commission has undertaken an ambitious initiative to improve system efficiency, empower customer choice, and encourage greater penetration of clean generation and efficiency technologies. Called the *Reforming the Energy Vision* initiative, or REV, this case is proceeding on two tracks. The focus of Track Two is to examine what regulatory changes in current regulatory, tariff, and market designs and incentive structures are needed to better align utility interests with achieving the PSC's objectives. Synapse is providing the Natural Resources Defense Council (NRDC) with analytical and policy expertise to help NRDC ensure that REV Track Two: (1) results in a regulatory and ratemaking model for New York that moves away from electricity as a commodity, (2) promotes the penetration of clean and renewable resources, (3) ultimately decarbonizes the electric sector, and (4) becomes a model for other jurisdictions. Synapse will assist NRDC in this matter by conducting quantitative research and analysis to inform NRDC comments and proposals, developing and executing work plans for strategic engagement in REV Track Two, working with NRDC to draft submissions to the PSC, and otherwise participate in REV-related stakeholder processes, where required. Project ongoing.

Benefit-Cost Analysis for Distributed Energy Resources

Client: Advanced Energy Economy Institute

In its *Reforming the Energy Vision* proceeding, the New York Public Service Commission has undertaken an ambitious initiative to improve the New York electricity system through better incorporation of distributed energy resources (DERs): distributed generation, distributed storage, energy efficiency, and demand response. To support this initiative, Synapse developed a benefit-cost analysis framework that will provide the Commission and other stakeholders with the information necessary to determine which resources will be in the public interest and will meet the Commission's energy policy goals. This DER benefit-cost analysis framework outlines the methods for identifying, valuing, and monetizing costs and benefits associated with DERs, including those that have traditionally been hard to quantify, and thus previously ignored. The framework also discusses how to account for the risk mitigation benefits of DERs, and provides guidance regarding the appropriate discount rate to use for evaluating distributed energy resources to meet state energy policy goals. Project completed September 2014.



Investigation to Reexamine the Existing Decoupling Mechanisms for the Hawaiian Electric Companies

Client: Hawaii Division of Consumer Advocacy

Synapse is assisting the Hawaii Division of Consumer Advocacy in an investigation to reexamine the existing decoupling mechanisms for the Hawaiian Electric Companies (Docket 2013-0141). The Hawaii Public Utilities Commission opened this investigation to determine whether the existing decoupling mechanisms, including both the Revenue Balancing Account (RBA) and the Revenue Adjustment Mechanism (RAM), are effectively serving their intended purposes, are fair to the HECO Companies and ratepayers, and are in the public interest. Schedule A of this docket addressed interest rates, tax deferrals, risk sharing mechanisms, baseline projects in RAM, and performance metrics. Schedule B of this docket will address issues concerning the RAM, particularly related to the incentives that the RAM provides or fails to provide, the fair allocation of risk, and ways to increase the efficiency of ratemaking. Synapse is taking a lead role in reviewing and commenting on the development of HECO's performance metrics associated with Schedule A, and is leading the development of the Consumer Advocate's statements of position regarding performance incentives in Schedule B, including analysis of how such incentives might interact with the decoupling mechanism. Project ongoing.

Kansas City Power and Light Rate Design Proposal

Client: Sierra Club

Sierra Club retained Synapse to evaluate Kansas City Power & Light's application before the Missouri Public Service Commission to nearly triple customers' fixed charge from \$9 to \$25 per month. Synapse conducted analysis on the impacts of the Company's proposed rate design and provided expert testimony on the Company's plan. Tim Woolf presented direct testimony to the Missouri Public Service Commission. Project ongoing.

Grid Modernization in Massachusetts

Client: Massachusetts Department of Public Utilities

Synapse worked with Raab Associates to provide support to the Massachusetts Department of Public Utilities (DPU) regarding a generic docket on grid modernization. The work included assistance with drafting a Notice of Investigation, as well as support for a stakeholder Working Group. The group met many times over a six-month period and prepared a report with recommendations to the Massachusetts DPU. The report addressed all aspects of grid modernization. Synapse was involved with all aspects of the report, and focused on regulatory models to support grid modernization and methods of analyzing cost-effectiveness. Project completed July 2013.

Review of Central Maine Power's Alternative Rate Plan

Client: Maine Office of the Public Advocate

The Maine Office of the Public Advocate (OPA) hired Synapse to assist in reviewing the 2014 Alternative Rate Plan proposed by Central Maine Power (CMP). As part of this review, Synapse assessed the reasonableness of CMP's initial capital investment mechanism and advised the OPA on its Motion to Dismiss. Synapse evaluated CMP's revised proposal for recovering capital investment costs and the degree to which the proposal fails to achieve the goals of performance-based ratemaking. Synapse also conducted an in-depth review of the Company's revenue decoupling proposal. In addition to technical support on specific topics, Synapse developed policy-level testimony



to synthesize the findings on all of the issues addressed by OPA to provide overall policy recommendations. Synapse provided support during the settlement process, and Tim Woolf testified at the hearings. Project completed October 2014.

Utah Net Metering Proceeding

Client: Sierra Club

Synapse is assisting Sierra Club and its fellow coalition members in their involvement in a Utah net metering proceeding (Utah Division of Public Utilities Docket No. 14-035-114, In the Matter of the Investigation of the Costs and Benefits of PacifiCorp's Net Metering Program). Synapse is providing support for four technical conferences (on technical valuation, economic valuation, cost-effectiveness valuation, and rate design and cost of service) and preparing a report on designing a framework for calculating the benefits and costs of PacifiCorp's net metering program. The report will lay out the proposed framework, describe the benefits and costs that should be included when evaluating net metering tariffs, identify the undesirable implications associated with increasing fixed charges, and detail the methods that can be used to calculate an accurate value of distributed generation for use in a net metering policy in Utah. Project ongoing.



5. BUDGET

The following table presents the current hourly billing rates for the key personnel listed above in U.S. dollars and in Canadian dollars, at the current exchange rate of \$1 USD to \$1.26 CAD. We review and revise our billing rates once a year in July.

Personnel	Hourly Rate (USD)	Hourly Rate (CAD)
Tim Woolf <i>Vice President</i>	\$230	\$290
Melissa Whited <i>Senior Associate</i>	\$175	\$221
Alice Napoleon <i>Senior Associate</i>	\$175	\$221

Below is our cost estimate for provision of expert services in this matter. We have developed this budget in U.S. dollars, but convert the final amount to Canadian dollars, for a total of \$99,464 CAD.

Tasks:	Total Costs	Total Days	\$230 (USD) Woolf	\$175 (USD) Whited	\$175 (USD) Napoleon
Develop memos outlining key issues, options, and considerations	\$18,560	12.0	4	5	3
Participate in discussions with intervenors	\$11,560	7.0	4	2	1
Develop positions and supporting evidence	\$23,640	15.0	6	5	4
Prepare for and attend hearings	\$16,200	10.0	5	4	1
Project management	\$6,480	4.0	2	2	
Total Labor Days	---	48.0	21.0	18.0	9.0
Total Labor Costs	\$76,440	---	\$38,640	\$25,200	\$12,600
Travel Expenses	\$2,500	---	---	---	---
Total Costs (USD)	\$78,940	---	---	---	---
Total Costs (CAD)	\$99,464				

