



# ENERGY REGULATION QUARTERLY

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## MISSION STATEMENT

*The mission of Energy Regulation Quarterly (ERQ) is to provide a forum for debate and discussion on issues surrounding the regulated energy industries in Canada, including decisions of regulatory tribunals, related legislative and policy actions and initiatives and actions by regulated companies and stakeholders. The role of the ERQ is to provide analysis and context that go beyond day-to-day developments. It strives to be balanced in its treatment of issues.*

*Authors are drawn from a roster of individuals with diverse backgrounds who are acknowledged leaders in the field of energy regulation. Other authors are invited by the managing editors to submit contributions from time to time.*

## EDITORIAL POLICY

*The ERQ is published online by the Canadian Gas Association (CGA) to create a better understanding of energy regulatory issues and trends in Canada.*

*The managing editors will work with CGA in the identification of themes and topics for each issue. They will author editorial opinions, select contributors, and edit contributions to ensure consistency of style and quality. The managing editors have exclusive responsibility for selecting items for publication.*

*The ERQ will maintain a “roster” of contributors and supporters who have been invited by the managing editors to lend their names and their contributions to the publication. Individuals on the roster may be invited by the managing editors to author articles on particular topics or they may propose contributions at their own initiative. Other individuals may also be invited by the managing editors to author articles on particular topics.*

*The substantive content of individual articles is the sole responsibility of the respective contributors. Where contributors have represented or otherwise been associated with parties to a case that is the subject of their contribution to ERQ, notification to that effect will be included in a footnote.*

*In addition to the regular quarterly publication of Issues of ERQ, comments or links to current developments may be posted to the website from time to time, particularly where timeliness is a consideration.*

*The ERQ invites readers to offer commentary on published articles and invites contributors to offer rebuttals where appropriate. Commentaries and rebuttals will be posted on the ERQ website ([www.energyregulationquarterly.ca](http://www.energyregulationquarterly.ca)).*

# ENERGY REGULATION QUARTERLY

## TABLE OF CONTENTS

### **EDITORIAL**

Editorial .....	5
<i>Rowland Harrison K.C. and Gordon E. Kaiser</i>	

### **IN MEMORIAM**

Remembering Gordon Edward Kaiser .....	6
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### **ARTICLE**

Alberta Regulatory Developments for 2023.....	8
<i>Bob Heggie</i>	

What “Value Added” do Utility Regulators Provide?.....	14
<i>Jackie Ashley and David Morton</i>	

A Faint Hope for Development of Mackenzie Delta Gas? .....	22
<i>Rowland J. Harrison, K.C.</i>	

### **BOOK REVIEW**

<i>Fossil Future</i> , Alex Epstein .....	24
<i>Kenneth A. Barry</i>	

# EDITORIAL

Managing Editors

*Rowland Harrison K.C. and Gordon E. Kaiser*

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Sadly, the first item in this issue of *Energy Regulation Quarterly* (ERQ) is an *In Memoriam* remembering Gordon E. Kaiser, the Managing Editor who was instrumental in the founding of ERQ more than 10 years ago, who died on May 16, 2024. There is no doubt that without Gordon's vision, determination and commitment, *ERQ* simply would not exist. His contributions are memorialized by his professional colleague and friend Bob Heggie and by Timothy Egan on behalf of the Canadian Gas Association, the publisher of *ERQ*.

The first article in this issue is Bob Heggie's review of "Alberta Regulatory Developments for 2023", which had been intended as a contribution to the "Year in Review" series that Gordon had been responsible for and which he was busy developing at the time he died. In the circumstances, it is included here as a standalone review of Alberta-only developments. Bob's agreement to do so is gratefully acknowledged.

In the following article, Jackie Ashley and David Morton take a step back to revisit the foundational question: "What "Value Added" do Utility Regulators Provide?" Their reflections were prompted by being asked how regulators evaluate their own performance: "It was surprisingly difficult to respond to this question." In rising to the challenge, they helpfully revisit some first principles and invoke Scott Hempling's observation that the measurement of value is necessary "but the currency of value is elusive."

The potential development of the extensive natural gas reserves in the Mackenzie Delta has been thwarted twice — first by the recommendation of the 1977 Berger Report of a 10-year moratorium principally to allow for the settlement of Aboriginal land claims and then in 2017 by the steep decline in natural gas prices. In the third article of this issue, Rowland J. Harrison asks whether if there may be "A Faint Hope for Development of Mackenzie Delta

Gas?" in light of the conclusion of a recent report for the Government of the Northwest Territories that "the responsible development and export of Mackenzie Delta Liquefied Natural Gas (MDLNG) has enough merit to, at least, warrant a full study."

The issue closes with a review by Kenneth A. Barry of Alex Epstein's *Fossil Future*, subtitled "Why Global Human Flourishing Requires More Oil, Coal, and Natural Gas – Not Less". ■

# REMEMBERING GORDON EDWARD KAISER



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*Bob Heggie*

I am honored that Tim Egan and Rowland Harrison, Gordon's collaborators on this journal, asked me to offer a remembrance of Gordon.

Gordon was our friend, teacher, and a giant in the fields of competition law, telecommunications, and energy regulation.

He had three full professional careers: an accomplished lawyer, a successful entrepreneur, and an impactful regulator and adjudicator.

For many of you who worked with and knew him, you will remember his shrewd insights, keen intellect, and unyielding, principled advocacy. Gord worked in the tradition of excellence; high standards of craftsmanship in his writing and an affection for ideas and connecting people. He was an idealist who would never back down from a fight and relentlessly pursued his philosophy of the law

centered on fairness, democratic principles, and the public interest.

Gord's strong-minded individualism and scholarship came naturally to him. He loved to tell the story that as a thirteen-year-old he asked his parents for a full set of the Dominion Law Reports. He knew he wanted to be a lawyer and loved the practice of law, but his gifts extended to economics, and he graduated from his beloved *Alma mater*, Queen's University, with both a law degree and master's in economics. This combination served him well throughout his career, but particularly as a bold adjudicator as Vice-Chair at the Ontario Energy Board where he ranks as one of our most distinguished interpreters of the law.

Gord's public service contributions are his greatest legacy, including the establishment of this journal and the Energy Law Forum. Perhaps his most important contribution was creating a culture in the regulatory community that focused on education.

A lifelong learner, at his heart Gord was a teacher. He established an energy regulation course at Queen's University that has educated more than 1,400 students over the years. I vividly recall Gord delivering passionate lectures at the course, holding the students' rapt attention. He delighted in the camaraderie with his students, always holding court at his favourite restaurant — Chez Piggy — after a day of lectures.

Gord had an abiding interest in technology and much of his later years were spent focused on how technology would allow our energy sector and markets to meet the issues facing us today and flourish in the future.

Gord cared deeply about people and relentlessly brought them together to debate policy, technology, or the latest regulatory and legal cases.

In our system of shared responsibility, his vision for regulators was, above all, to protect the public interest. As we honor his legacy, let's re-dedicate ourselves, today and every day to serve the role he envisioned — a protector of the law and a guardian of the public interest.

My world is sadder and darker with Gord gone — I miss his friendship most of all.

*Timothy Egan*

Anyone with experience working with Gordon Kaiser will probably have a sense of the familiar as they read these brief comments on his role in the founding of *Energy Regulation Quarterly* (ERQ).

One day the suggestion arose for a journal commenting on regulatory decisions. There was much agreement that too often decisions came down and no one reflected on their implications, much less their merits. Gordon had been a driving force for many years already in keeping a robust conversation going amongst regulators, the legal community, utility executives and policymakers. The ERQ was but the next step building on the Queen's regulatory course, the various industry-regulator dialogues and other efforts that he, Michael Cleland, Hans Konow, Peter Gurnham, Bob Heggie and many others had so carefully developed. Whether or not the germ for the idea of the ERQ was his, he immediately seized on it and ran with it, suggesting he was an ideal candidate to be an editor.

As it turned out he was. He was instrumental in building support for the idea from day one. Into an (initially) very sceptical regulator pool, he plunged (cannonballed?) with his usual enthusiasm, assuring them that “no publisher will tell me what to say so you know it will be independent.” It worked, and regulators across the country started reading it. He was key to soliciting content, bending arms as few others could to get pieces written from experts across the country and abroad, drawing on his incredible network of friends and acquaintances. And he made a point of contributing regularly himself, usually entirely unsolicited...

Gordon was a force of nature and it showed in how he got things done. Speaking as his publisher I can say that while working with Gordon often involved the unexpected, he was always incredibly committed to the project and determined to meet over a good meal and fine red wine to hash out any concerns.

Alongside his fellow founding editor, Rowland Harrison, he made sure that the ERQ established itself as an important forum for reflection on economic regulation in the energy sector in Canada. May the ERQ's continuing success be part of his legacy.

To Charlene and his family, all of us behind ERQ extend our deepest sympathies at their loss — Gordon's death is a sorrow shared by us all. May he rest in peace. ■

# ALBERTA REGULATORY DEVELOPMENTS FOR 2023

*Bob Heggie\**

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In relation to the Alberta Utilities Commission (AUC), the Alberta Court of Appeal issued two decisions of note in 2023; in both cases the AUC's decision was overturned. The Alberta Government also temporarily paused the AUC's ability to approve new renewable projects.

## **2016 FORT MCMURRAY WILDFIRE COSTS**

In *ATCO Electric Ltd v Alberta Utilities Commission*,<sup>1</sup> the Court considered the Commission's 2019 decision<sup>2</sup> to allocate the undepreciated costs of ATCO's electric distribution system assets destroyed by the 2016 Fort McMurray wildfire to the account of ATCO's ratepayers, and not its shareholders.

The Commission's approach was informed by the principles it extracted from the Supreme Court of Canada's seminal *Stores Block*<sup>3</sup> decision, and the Commission's subsequent Utility Asset Disposition (UAD) policy decision.<sup>4</sup>

Consideration of the *Stores Block* case, all subsequent AUC and judicial decisions which applied it, and the UAD decision, is well beyond the scope of this summary. There has been almost twenty years of litigation on various asset disposition fact patterns in Alberta.

The cases have not provided a clear picture for investors or ratepayers regarding how stranded assets should be treated. This observation comes from both industry commentators and the AUC itself. The Court's 2023 decision potentially provides an element of incremental certainty, but only to one class of cases; assets destroyed by a wildfire.

The Commission's decision applied the UAD principles, particularly the depreciation principles previously adopted by the Commission in the UAD decision, in allocating the losses associated with the premature retirement of utility assets.

Pursuant to those principles, to determine whether the residual value of the destroyed assets was to be allocated to the shareholder or ratepayer, the Commission examined whether the retirement was "extraordinary"<sup>5</sup> or "ordinary."<sup>6</sup> This was important because, according to the depreciation-based principles being applied, an "extraordinary"<sup>7</sup> retirement resulted in the residual value being allocated to shareholders and an "ordinary"<sup>8</sup> retirement resulted in the residual value being allocated to ratepayers. Finally, the question of whether an event was "extraordinary"<sup>9</sup> or "ordinary"<sup>10</sup> turned on whether the utility's most recent

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\* Bob Heggie is the Chief Executive for the Alberta Utilities Commission.

<sup>1</sup> *ATCO Electric Ltd v Alberta Utilities Commission*, 2023 ABCA 129.

<sup>2</sup> *ATCO Electric Ltd, Z Factor Adjustment for the 2016 Regional Municipality of Wood Buffalo Wildfire* (2 October 2019), 21609-D01-2019, online (pdf): Alberta Utilities Commission <efiling-webapi.auc.ab.ca/Document/Get/799233>.

<sup>3</sup> *ATCO Gas & Pipelines Ltd v Alberta (Energy & Utilities Board)*, 2006 SCC 4 [*Stores Block*].

<sup>4</sup> Decision 2013-417 (26 November 2013), Alberta Utilities Commission [*UAD decision*].

<sup>5</sup> *Supra* note 2 at para 88.

<sup>6</sup> *Ibid.*

<sup>7</sup> *Ibid.*

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*, at para 89.

<sup>10</sup> *Ibid.*



depreciation study considered the risk of assets being retired in events with similar characteristics. If the study considered that risk, the event was “ordinary”<sup>11</sup> and, if not, the event was “extraordinary.”<sup>12</sup>

In the case of the assets destroyed by the Fort McMurray wildfire, the Commission found there was no recognition or incorporation of similar events in ATCO’s depreciation study. As a result, the Commission found that the asset retirements should be characterized as “extraordinary.”<sup>13</sup> The Commission assigned the residual value of the destroyed asset to ATCO’s shareholders.

Critical to the Commission’s reasoning was the continued application of the Commission’s conclusion in the UAD decision that the effect of the *Stores Block* decision and subsequent court cases was to limit the Commission’s flexibility in dealing with cost allocation issues. More specifically, the Commission interpreted the seminal finding by the Supreme Court, that utility customers do not acquire any proprietary interest in a utility’s assets<sup>14</sup>, to mean that because assets used for utility service are the property of the utility service provider, any gain or risk of loss with respect to that original investment would be for the account of the owner of the property.

The Court of Appeal made short work of that constraint. The Court found that the Commission erred in law in finding that its options for dealing with assets destroyed by natural disasters were constrained by *Stores Block*. The Court observed that the *Stores Block* case dealt with the sale of assets as opposed to assets destroyed by wildfire, and that it did not bind the Commission in setting a just and reasonable tariff in relation to the losses at issue. With that finding, the matter was referred back to the AUC for reconsideration.

In *Reconsideration of ATCO Electric Ltd. Z Factor Adjustment for the 2016 Wood Buffalo Fire* decision<sup>15</sup> the Commission reconsidered the matter in light of the Court’s direction. The Commission found that, in the context of the Fort McMurray wildfire, assigning the residual value of the destroyed assets to ATCO’s shareholders removed ATCO’s reasonable opportunity to recover its costs.

This result recognizes the destroyed assets had been in rate base, had been deemed prudent and, although now destroyed for reasons outside of ATCO’s control, the replacement assets continued to be required for utility service.

The Commission was careful to limit this reasoning to the facts before it (being assets destroyed by wildfire). However, having ratepayers bear asset costs that result from natural disaster causes is arguably not consistent with the no acquired rights reasoning in *Stores Block*, but is more aligned with the pre-*Stores Block* regulatory approach of having ratepayers and shareholders share both the benefits and burdens of utility service, depending on the circumstances.

The Court also clarified that pre-*Vavilov*<sup>16</sup> cases continue to be presumptively binding precedent, notwithstanding the change in standard of review analysis. The ATCO argument in this regard was aimed at the Court’s imprimatur of the Commission’s UAD decision in *FortisAlberta Inc v Alberta (Utilities Commission)*.<sup>17</sup>

## AESO CUSTOMER CONTRIBUTIONS

A second decision of note is the Court of Appeal’s decision in *Alta Link Management Ltd v Alberta Utilities Commission*.<sup>18</sup>

The case involves the question of who should pay for new transmission facilities and whether

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<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*

<sup>13</sup> *Ibid.*, at para 128.

<sup>14</sup> *Stores Block*, *supra* note 3 at para 83.

<sup>15</sup> *Reconsideration of ATCO Electric Ltd Z Factor Adjustment for the 2016 Wood Buffalo Fire* (10 December 2023), 28320-D01-2023, online (pdf): Alberta Utilities Commissions <efiling-webapi.auc.ab.ca/Document/Get/799233>.

<sup>16</sup> *Canada (Minister of Citizenship and Immigration) v Vavilov*, 2019 SCC 65 [*Vavilov*].

<sup>17</sup> *FortisAlberta Inc v Alberta Utilities Commission*, 2024 ABCA 110 (CanLII).

<sup>18</sup> *Alta Link Management Ltd v Alberta Utilities Commission*, 2023 ABCA 325 (CanLII).

or not customer contributions should be used to finance the required investment.

Customer contributions are a longstanding financing and regulatory tool used to balance the obligation to serve customers against the risk of building facilities to serve one or a few customers, that will be paid for by other customers in general rates. The contribution policy is normally based on collecting the excess of project connection costs over forecast customer supporting revenue.

In the old vertically integrated world, customer contributions were not an issue. The regulator would approve the utility's investment policy and that policy would dictate when a contribution was required to provide service. When a contribution was required and paid by a ratepayer to a utility, for regulatory accounting purposes, that contributed capital was excluded from rate base. These customer payments (variously called customer contributions or contributions in aid of construction) tend to be temporary in nature and are re-paid by the utility over the useful life of the related facility.

When Alberta restructured the electricity market 25 years ago to support competitive generation supply and retail services, these changes introduced a new commercial interface between the transmission and distribution systems that did not exist in the old vertically integrated world. In addition, to facilitate a competitive wholesale market, the administration of access to transmission lines was placed in the hands of an independent third party, called the Transmission Administrator (TA). Today the TA has become the Independent System Operator, which operates under the business name of the Alberta Electric System Operator (AESO).

In its new terms and conditions for transmission system access, the AESO developed a contribution policy that introduced price signals to the transmission/distribution interface to ensure the efficient and economic development of transmission facilities.

What this meant is that distribution companies would be required, in certain circumstances, to pay a customer contribution when requesting service from the AESO.

It is fair to say that the AESO's contribution policy, when first approved in 2000 by the Commission's predecessor, was highly contentious. It was widely recognized,

even by the regulator, that the policy, once implemented, might present difficulties over time. As it turns out, the decision to send a price signal to distribution companies in the contribution policy created incentives and results that the Commission attempted to address in its decision that is the subject of this appeal.

The incentives and outcomes tackled by the Commission are best explained through an example.

A distribution utility is receiving requests for service in a frontier area of Alberta. The utility evaluates the request to determine whether the best economic solution for serving the load is a distribution or transmission addition. If the distribution solution is chosen, the utility's contribution policy requires it to determine if the costs of the facility should be allocated to all customers on the distribution system (no risk the revenues will not match the project costs) or to one or more of the customers requesting service (a risk of revenue shortfall).

If a contribution is required, the utility collects it from the customers and that contributed capital is an offset to its rate base.

If the distribution utility concludes that a transmission system extension or expansion is the best solution, the utility approaches the AESO to request service.

At this point, the AESO determines whether a transmission solution is indeed the most economical solution to provide the requested service and, if so, whether a customer contribution is required to be paid by the distribution utility. In making that determination, the distribution utility provides the AESO with all the information required to support the decision to plan, design and build a transmission facility, including forecasted load growth, the type of load and the number of customers. This information is critical in making the determination whether the anticipated revenue will meet the required investment. If so, the load is classified as system and the investment costs are rolled in and paid by all transmission ratepayers. If there is a forecast revenue shortfall, a customer contribution will be required.

If a customer contribution is assessed against the distribution utility, it has the discretion to allocate these costs to one or more customers behind the transmission/distribution interface

(called the “POD” or point of delivery), to all customers behind the POD or to all ratepayers on the distribution system.

If the utility passes through the customer contribution to its customers, whether one or more, the money collected by the utility is paid to the transmission company selected by the AESO to build the new transmission capacity and the payment is expensed for accounting and regulatory purposes.

If the distribution utility makes the determination that the contribution cost should be allocated to all ratepayers on the distribution system, the distribution company pays the contribution itself. However, for accounting and regulatory purposes, the customer contribution ultimately *paid* by the distribution utility to the transmission utility is added to the distribution utility’s rate base and that capital earns a return until the related assets are fully depreciated.

The customer contribution *received* by the transmission utility is an offset to its rate base and reduces its asset base for revenue requirement purposes.

This potential outcome creates an incentive for the distribution utility to cherry pick between the distribution company and AESO’s customer contribution policies. The choice of a transmission solution, with a customer contribution paid by the distribution utility (a system allocation) provides an opportunity to augment its capital basis and earnings.

On the other hand, the contributed capital received by the transmission utility is treated as an offset to its asset base, diminishing the capital basis and its earnings even though it built and operated the related transmission facility.

The Commission sought to remove the distribution utility’s incentive to favour a transmission solution by eliminating the practice of adding the customer contribution it pays to its rate base when it allocates the

contribution to all distribution ratepayers. It also held that the transmission utility should not be able to add the customer contribution received to its rate base.

The Court found that the Commission had not provided sufficient notice that the opportunity to earn a return on customer contributions might be eliminated for both transmission utilities and distribution utilities and returned the matter to the Commission for reconsideration. The Commission has not issued its reconsideration decision.

### **RENEWABLE GENERATION PAUSE AND INQUIRY**

On August 3, 2023, the Minister of Affordability and Utilities directed the Alberta Utilities Commission to pause approvals for new renewable electricity generation projects until February 29, 2024.<sup>19</sup> The same day, the Minister directed the Commission to inquire and report on specific land use issues regarding renewable power plants, and the impact increasing growth of renewables has to both generation supply mix and electricity system reliability. The Commission was directed to file a report making findings or providing observations to the Minister no later than March 29, 2024.<sup>20</sup>

The Commission separated the inquiry into two modules: Module A to address the land use issues; and Module B to explore the supply mix and system reliability issues.<sup>21</sup>

In Module A, the Commission retained experts to prepare reports on the various issues being considered. These included: examining the impacts of renewable power plants on agricultural lands and pristine viewscapes; whether to implement mandatory reclamation security requirements to address renewable power plant abandonments costs; and the potential for developing renewable power plants on Crown lands.

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<sup>19</sup> *Generation Approvals Pause Regulation*, Alta Reg 108/2023 (*Alberta Utilities Commission Act*).

<sup>20</sup> *Terms of Reference for the Inquiry into the ongoing economic, orderly and efficient development of electricity generation in Alberta*, Alta Reg 171/2023 (*Alberta Utilities Commission Act*).

<sup>21</sup> *Inquiry into the ongoing economic, orderly and efficient development of electricity generation in Alberta* (11 September 2023), AUC 2023-06.

The Commission, in its Module A Report<sup>22</sup>, provided observations, commitments relating to changes to AUC practices and procedures, as well as options for the government to consider in relation to potential legislative or policy changes. In addition, the Commission considered the role of municipal governments in the development and review of renewable projects.

The Minister has reviewed the Module A Report and signaled the policy changes the Alberta Government will be pursuing through legislation before the end of 2024.<sup>23</sup>

While the pause of renewable project approvals may have come as a surprise to the sector, prior to it, the Commission had been scrutinizing renewable projects more closely, including denying applications or increasing the use of conditions and mitigation measures to address stakeholder concerns.

Four decisions in 2023 are notable in this vein.

On April 20, 2023, the Commission denied an application for the *Footbills Solar Project*<sup>24</sup>. The denial was based in part on the potential for the project to result in high bird mortalities and the project siting on the Frank Lake International Bird Area (IBA). Approximately 80 per cent of the project was sited within the Frank Lake IBA setback.

On July 20, 2023, the Commission denied an application for the construction and operation of the *Burdett Solar Project*.<sup>25</sup> Again, the denial was based on project siting resulting

in unacceptable risks to migratory birds and water birds.

On July 19, 2023, the Commission also denied an application to connect the *Nova Solar Power Plant*<sup>26</sup> to the grid in response to a deficient route siting and stakeholder consultation process.

Lastly on November 8, 2023, the Commission in the *AECG Forty Mile Wind GP Corp* decision,<sup>27</sup> denied the location of two turbines for the *Halkirk 2 Wind Power Project* due to unacceptable aviation safety risk associated with flight operations at a nearby aerodrome.

The Alberta government's comprehensive policy review and resulting policy direction will provide clarity for proponents in considering projects and their design, and will assist the Commission in its assessment of projects in light of recent precedents.

With respect to Module B, the Commission was charged with considering the impacts of the increasing growth of renewables to both generation supply mix and electricity system reliability.

The Commission used three analytical approaches, including a quantitative market and financial modelling of the Alberta power market, a forecast of future consumer electricity bills, and a qualitative assessment of the attractiveness of the Alberta power market.

The Module B Report was provided to the Minister of Affordability and Utilities on March 28, 2024.

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<sup>22</sup> *AUC inquiry into the ongoing economic, orderly and efficient development of electricity generation in Alberta*, Module A Report, (31 January 2024).

<sup>23</sup> *Policy Guidance to the Alberta Utilities Commission* (Minister of Affordability), (28 February 2024), (letter to the AUC).

<sup>24</sup> *Footbills Solar GP Inc*, (20 April 2023), 27486-D01-2023 [*Footbills Solar Project*], online (pdf): Alberta Utilities Commission <filing-webapi.auc.ab.ca/Document/Get/786809>.

<sup>25</sup> *Aura Power Renewables Ltd*, (20 July 2023), 27488-D01-2023, [*Burdett Solar Project*], online (pdf): Alberta Utilities Commission <filing-webapi.auc.ab.ca/Document/Get/791273>.

<sup>26</sup> *Nova Solar GP Inc & AltaLink Management Ltd: Nova Solar Power Plant and Transmission Connection*, (19 July 2023), 27589-D01-2023, [*Nova Solar Power Plant*], online (pdf): Alberta Utilities Commission <filing-webapi.auc.ab.ca/Document/Get/791225>.

<sup>27</sup> *AECG Forty Mile Wind GP Corp: Forty Mile Wind Power Project Amendments*, (8 November 2023), 27561-D05-2023, [*AECG Forty Mile Wind GP Corp*], online (pdf): Alberta Utilities Commission <filing-webapi.auc.ab.ca/Document/Get/796413>.

While the Module B Report has not been made public, the Minister has already directed<sup>28</sup> the AESO<sup>29</sup> and MSA<sup>30</sup> to pursue changes to the Alberta power market. Those changes include introduction of a mandatory day ahead market, centralized unit commitment and mechanisms to encourage investment in generation that value dispatchability and reliability attributes. The Government of Alberta has also announced it is evaluating proposed changes to the *Transmission Regulation*.<sup>31</sup> That Regulation enshrines the somewhat unusual regulatory framework of a fully uncongested grid paid for by load through postage stamp rates. Potential changes to that framework, could result in renewable generators paying an increased share of transmission costs, and potentially facing higher amounts of congestion. ■

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<sup>28</sup> See the letter from the Minister of Affordability and Utilities to Chief Executive Officer of the Market Surveillance Administrator (11 March 2024), online (pdf): <[www.albertamsa.ca/assets/Documents/Letter-from-Minister-Neudorf-to-the-MSA.pdf](http://www.albertamsa.ca/assets/Documents/Letter-from-Minister-Neudorf-to-the-MSA.pdf)>; See also the letter Minister of Affordability and Utilities to President and Chief Executive Officer of the Alberta Electric System Operator (11 March 2024), online (pdf): <[ehq-production-canada.s3.ca-central-1.amazonaws.com/7fa2c98bd3f6d937ebce1b9700fe25f999b07129/original/1710193426/d439ab6c3817d3b5b0404cca1a7148ec\\_Direction\\_Letter\\_from\\_Minister\\_11March2024.pdf](https://ehq-production-canada.s3.ca-central-1.amazonaws.com/7fa2c98bd3f6d937ebce1b9700fe25f999b07129/original/1710193426/d439ab6c3817d3b5b0404cca1a7148ec_Direction_Letter_from_Minister_11March2024.pdf)>.

<sup>29</sup> Alberta Electric System Operator, *Alberta's Restructured Energy Market: AESO Recommendation to the Minister of Affordability and Utilities*, (31 January 2024), online (pdf): <[ehq-production-canada.s3.ca-central-1.amazonaws.com/530bdb99b5d359617971a5afbfb7c6ce102c948d/original/1710186949/d9df2d63906c31e963da4d8b6a51f3a8\\_AESO\\_REM\\_Recommendation\\_Report\\_31Jan2024.pdf](https://ehq-production-canada.s3.ca-central-1.amazonaws.com/530bdb99b5d359617971a5afbfb7c6ce102c948d/original/1710186949/d9df2d63906c31e963da4d8b6a51f3a8_AESO_REM_Recommendation_Report_31Jan2024.pdf)>.

<sup>30</sup> Market Surveillance Administrator, *Advice to support more effective competition on the electricity market: Interim action and an Enhanced Energy Market for Alberta*, (21 December 2023), online (pdf): <[www.albertamsa.ca/assets/Documents/MSA-Advice-to-Minister.pdf](http://www.albertamsa.ca/assets/Documents/MSA-Advice-to-Minister.pdf)>.

<sup>31</sup> *Transmission Regulation*, Alta Reg 86/2007.

# WHAT “VALUE ADDED” DO UTILITY REGULATORS PROVIDE?

*Jackie Ashley and David Morton\**

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## I. INTRODUCTION

In 2022, following a discussion with Mongolia’s utility regulator on the importance of evaluating utility performance, a delegate asked how regulators, in turn, evaluate their own performance.

It was surprisingly difficult to respond to this question. Traditional metrics used by regulators — such as turnaround time of proceedings or cost of regulation — seemed to fall woefully short of measuring our value added. By those metrics alone, no regulation would be the most preferable option.

Many years ago, Jim Rohn said, “we get paid for bringing value to the marketplace.”<sup>1</sup> So, what is the value added that utility regulators provide?

In order to articulate the key deliverables of utility regulators, we reach back in time to the seminal work undertaken by James Bonbright.<sup>2</sup>

These deliverables could be used as a basis to measure a utility regulator’s value added, and therefore provide further insight into a utility regulator’s performance.

## II. BONBRIGHT AND REGULATOR DELIVERABLES

The economic regulation of public utilities was put in place to address the risk to society arising from natural monopolies and dates back to the early 20<sup>th</sup> century. Bonbright’s *Principles of Public Utility Rates*,<sup>3</sup> first published in 1961, was built around a model of vertically integrated electricity monopolies<sup>4</sup> and approached ratemaking largely as an exercise in balancing the ability of utilities to attract capital with those of ratepayers,<sup>5</sup> all within a “public interest” framework. As Bonbright stated in *Principles of Public Utility Rates*, the complete or qualified observance of the principles of rate-making policy subserve the public interest.<sup>6</sup>

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David Morton is a professional engineer with over 45 years of experience, specializing in utility regulation and energy policy. He led the British Columbia Utilities Commission (BCUC) and conducted several significant inquiries for the British Columbia government. Currently, he is involved in international energy regulatory associations and frequently participates in global conferences and training sessions.

<sup>1</sup> Gnana Raju, “Paid for Bringing Value to Marketplace-Jim Rohn” (20 May 2020) at 0:02s, online (video): <[www.youtube.com/watch?v=YK3F-y9E3QA](https://www.youtube.com/watch?v=YK3F-y9E3QA)>.

<sup>2</sup> James C Bonbright, Albert L Danielsen & David R Kamerschen, *Principles of Public Utility Rates*, 2<sup>nd</sup> (Public Utilities Reports, Inc 1988) [*Bonbright*].

<sup>3</sup> James C Bonbright, *Principles of Public Utility Rates*, (Columbia University Press, 1961) [*Principles of Public Utility Rates*].

<sup>4</sup> David M Mandy, *Producers, Consumers, and Partial Equilibrium*, (Academic Press, 2017) at ch 14.

<sup>5</sup> Don Schultz, Woodrow W Clark & Arnie Sowell, *Sustainable Communities Design Handbook*, ed by Woodrow W Clark (Green Engineering, Architecture, and Technology, 2010) at ch 7.

<sup>6</sup> See *Principles of Public Utility Rates*, *supra* note 3 at 27.

Bonbright’s chapter *Criteria of a Fair Return*<sup>7</sup> provides a starting point for developing the key deliverables of a utility regulator. To begin, we reword Bonbright’s criteria to focus on the key regulator deliverables as follows:

Bonbright Fair Return Criteria	Key Regulator Deliverables
Ensure financial stability	Ensure the financial stability of regulated utilities
Encourage efficient managerial practice	Motivate utilities to operate efficiently and in the public interest
Promote consumer rationing	Encourage smart energy use
Providing a reasonable stable and predictable rate level to ratepayers	Aim for rates consumers can count on, without surprises
Ensure fairness to investors	Promote a fair playing field for all involved in the utility sector

These deliverables relate to the core mandate of utility regulators — addressing monopoly risk to ratepayers and society at large while ensuring utilities can raise sufficient capital to do the job they are required to. Where the regulator has other responsibilities (such as market facilitator) additional deliverables may be required.

Each of these 5 deliverables is described in more detail below.

**1. Ensure the Financial Stability of Regulated Utilities**

Bonbright states that among these five principles, a high place — perhaps even first

place — must be given to ensuring a utility is financially stable:

[s]etting rates below a level that allows a utility to recover its legitimate operating expenses plus a return on investment sufficient to maintain sound corporate credit will, in the long run, result in a company that is unable to live up to its obligations to serve the community.<sup>8</sup>

Bonbright also states that there can be other negative impacts to customers if the financial stability principle is not met, including a higher cost of financing, worsening reliability, and higher costs overall if it results in a deviation from least cost long-term planning.

Indeed, government-owned utilities facing financial distress often signify a jurisdiction that lacks an effective independent regulator. Examples of this issue can be seen in both Papua New Guinea and Sri Lanka.<sup>9</sup>

Scott Hempling, professor at Georgetown University Law Center where he teaches public utility law, identifies eight questions courts have asked to assess whether utility rates are sufficient to maintain financial stability:

- Is the revenue sufficient to expand service and maintain working capital?
- Is revenue sufficient to ensure that service to customers will not be impaired?
- Is cash flow sufficient for operations and debt payment?
- Does the debt-equity ratio reflect financial strength?
- Are the bond ratings sufficient to maintain financial integrity?

<sup>7</sup> Bonbright, *supra* note 2.

<sup>8</sup> *Ibid.*

<sup>9</sup> See Rabindra Nepal et al, “Independent power producers and deregulation in an island based small electricity system: The case of Papua New Guinea” (January 2023) 172 Energy Policy 113291, at 2, 5, 12. See also World Bank Group, “Creating Markets In Sri Lanka: Private Sector-Led Inclusive Growth from Islands of Excellence”, Washington, Country Private Sector Diagnostic, (1 July 2022) at 15, 53–54, online (pdf): <documents1.worldbank.org/curated/en/099537108052210728/pdf/IDU0542219930fd3b0484b09a88096bd1a1066e9.pdf>. See also “How Sri Lanka’s electricity tariffs are expected to be revised: interview” (9 February 2023) online: *EconomyNext* <www.economynext.com/how-sri-lankas-electricity-tariffs-are-expected-to-be-revised-interview-111873>.



- Is the quality of earnings — specifically, contribution work in progress and allowance for funds used during construction as a percentage of net income — sufficient to maintain financial integrity?
- How strong is the interest coverage ratio?
- Are there other factors affecting company value?<sup>10</sup>

These could be used to determine, for each regulated utility, whether there is a financial viability problem.

However, this does not mean that the utility regulator’s solution to financial viability issues should always be a rate increase — regulators are under no obligation to guarantee the returns of utilities facing competition pressures — they simply provide the utility the “opportunity” to earn a fair return.<sup>11</sup>

Great Britain’s regulator, the Office of Gas and Electricity Markets (Ofgem), further states that it is important that the regulatory framework does not provide excessive returns, reward inefficiency, or “bail-out” a company that has encountered financial distress as a result of its own behaviour.<sup>12</sup>

Regulator responses to identified financial viability issues may therefore include a variety of approaches, such as rate increases, rate smoothing, asset write-downs, or where financial viability issues are a result of government-imposed restrictions on rate increases, alerting the government to the problem.

## **2. Motivate Utilities to Operate Efficiently, and in the Public Interest**

The second deliverable is to motivate utilities to operate efficiently, and in the public interest.

Regulators have a unique ability to be able to use financial incentives to encourage a utility to move in one direction or another. However, to use this tool effectively the regulator has to have both a clear understanding of what desired utility outcomes are, whether it has the jurisdiction to incent those outcomes, and the tools it can use to incent a utility to deliver them.

### *Public Interest Outcomes*

For effective regulation, it is crucial that the regulator has a good understanding of what public-interest-driven outcomes (within the constraints of their regulatory mandate) should look like for each utility they regulate. Scott Hempling suggests the purposeful regulator ask themselves:

Do I have a definition of “public interest”? Have I made my definition transparent by articulating it to my fellow commissioners and the parties who appear before my commission? Is my definition consistent with my fellow commissioners’ definition? If not, have I worked out the differences?<sup>13</sup>

The Public Interest Toolkit describes the approach used by the newly formed New Zealand Electricity Authority to define its role. This Toolkit could assist regulators looking to develop their own public interest definition.<sup>14</sup>

The Toolkit includes a Public Interest Checklist, which could be used to help define outcomes that are within the scope of an economic regulator. For an economic regulator these outcomes include:

- Meeting legal requirements;
- Fairness (prices that avoid undue discrimination);

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<sup>10</sup> Scott Hempling, *Regulating Public Utility Performance: The Law of Market Structure, Pricing and Jurisdiction*, 2<sup>nd</sup> ed (American Bar Association: Section of Environment, Energy and Resources, 2013) at 231–33.

<sup>11</sup> See *Market Street Railway Co v Railroad Commission*, 324 US 548 (1945).

<sup>12</sup> Ofgem, “Guide to the RIIO-ED1 electricity distribution price control” (18 January 2017) at 59, online (pdf): <[www.ofgem.gov.uk/sites/default/files/docs/2017/01/guide\\_to\\_riioed1.pdf](http://www.ofgem.gov.uk/sites/default/files/docs/2017/01/guide_to_riioed1.pdf)>.

<sup>13</sup> Scott Hempling, *Preside Or Lead?: The Attributes and Actions of Effective Regulators*, 2<sup>nd</sup> ed (2013) at 203–09.

<sup>14</sup> Jackie Ashley & Carl Hansen, *An Energy Regulator’s Public Interest Toolkit: Energy, COVID, and Climate Change, Online Conference*, (2021) online (pdf): [iaee2021online.org/download/contribution/fullpaper/1081/1081\\_fullpaper\\_20210418\\_220003.pdf](http://iaee2021online.org/download/contribution/fullpaper/1081/1081_fullpaper_20210418_220003.pdf).



- Economic efficiency (efficient utility operation and investment decisions, efficient customer decisions, innovation);
- Reliability and Safety; and
- Customer Satisfaction.<sup>15</sup>

Supporting economic efficiency is a key deliverable for an economic regulator. However, the clean energy transition is making it harder to identify what efficient outcomes in the public interest should look like.

For example, while the utility regulator has traditionally been agnostic regarding a customer's fuel choice, it may now be in the public interest to encourage customers to switch to cleaner fuels when making investment decisions. The need for regulators to get better visibility into these new risks is described in a recent article "Stuck in the 1950's: Updating Regulatory Mandates for the 21<sup>st</sup> Century".<sup>16</sup>

In addition, while economic regulators may not be responsible for addressing broader social issues, given their primary role as a stand in for the competitive market, public interest consideration suggest they do need to consider public acceptability of their decisions.

Investors in competitive markets are increasingly looking at environmental, social and governance (ESG) matters as a critical element to building a more sustainable business. Regulators therefore also need to consider what these social expectations are, whether to incent utilities to meet these expectations and, if so, whether the utility is delivering on them.

#### *Regulatory framework*

Once the regulator has identified the desired outcomes for each utility it regulates, it can assess whether the existing regulatory framework provides appropriate incentives for utilities to achieve these outcomes.

The regulator has a suite of tools available to it to provide a regulatory framework that

encourages efficient utility managerial practice. However, the regulator must be knowledgeable about how those frameworks operate. As Malcolm Sparrow states:

[t]he regulator should be master of all the different regulatory structures — knowing the strengths and weaknesses of each model — and adept at determining which models would work best for different classes of risk.<sup>17</sup>

Sparrow stresses that there is no one "best" regulatory approach for a particular industry, or even within a single company. He states that within each company there are multiple risks, and no reason to assume that a model suitable for one class of risk is the best model for other classes of risk.<sup>18</sup>

So, what are some of the tools that utility regulators have in their toolkit? These can include:

- *Cost of Service Regulation:* The regulator reviews the utility's budget and allows the utility the opportunity to recover its approved costs plus a return on investment through rates. This model only mildly incentivizes the utility to find operational cost savings between rate cases and provides a strong incentive to favor building assets over demand side alternatives.
- *Multi-Year Tariffs:* Rate levels are set based on a formula over a multi-year period (for example, annual increases linked to inflation) to encourage the utility to seek operational cost savings. Service level metrics, such as reliability and customer service, ensure that cost savings are not achieved at the expense of service quality. This incentivizes the utility to find operational savings but can discourage investments in innovation and energy efficiency. A variation of this approach caps controllable costs (instead of rate levels) to remove the

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<sup>15</sup> *Ibid.*

<sup>16</sup> Michelle Nock, "Stuck in the 1950's: Updating Regulatory Mandates for the 21<sup>st</sup> Century" (2023) at 24, online (pdf): *IAEE Energy Forum* <[www.iaee.org/en/publications/newsletterdl.aspx?id=1060](http://www.iaee.org/en/publications/newsletterdl.aspx?id=1060)>.

<sup>17</sup> Malcolm K. Sparrow, *Fundamentals of Regulatory Design* (2020) at ch 5.

<sup>18</sup> *Ibid.*

energy efficiency disincentive, but can also discourage beneficial electrification.

- *Performance incentive mechanisms:* This can be an ‘add-on’ to the two approaches above. The utility is allowed to earn additional amounts if certain outcomes are met (such as meeting energy efficiency targets, reduced connection time for distributed generation or undertaking meaningful customer consultation).
- *Rules and Penalties:* The regulator can develop rules that the utility must comply with, such as mandatory reliability standards.
- *Risk-based frameworks:* For risks such as cybersecurity, extreme weather, and wildfires, the regulator could also include risk-based frameworks, such as those described in the *Hackers and Extreme Weather* article.<sup>19</sup>

The regulator may also decide not to regulate a utility at all (for example where it is customer owned or not providing a monopoly service) or only regulate in certain circumstances (for example, if a complaint is received).

This is not a complete list of all regulatory tools available. For example, Great Britain’s regulator Ofgem identified in 2010 that the existing regulatory framework did not support innovation and so made significant changes as a result, which included an innovation stimulus package.<sup>20</sup>

The key point is that the regulator considers whether the existing regulatory structure is

providing utility management with the correct incentives to elicit the desired performance. If it does not, the regulator may want to address it.

#### *Case Study – Great Britain Regulator*

An example of a regulator currently reviewing its suite of regulatory tools in light of changing circumstances comes from Great Britain.

In response to decarbonization goals, Great Britain is creating a new entity who will be responsible for natural gas and electric long term system planning — called a Future System Operator. These system plans will specify the network infrastructure needed to meet long-range net zero targets at the least overall cost to consumers.<sup>21</sup>

Great Britain’s electricity and gas regulator (Ofgem) is reviewing its regulatory framework in light of this change. Ofgem states that the Future System Operator (and not the utility) will now possess detailed expert system knowledge of assets and demand conditions, and so this allows it to consider regulatory frameworks that were previously off the table.<sup>22</sup>

This includes consideration of a “Plan and Deliver” regulatory framework, where grid expansion occurs in line with top-down system plans prepared by the Future System Operator. This is intended to reduce the risk that needed investments are not built.<sup>23</sup>

While this may seem like a step backwards — from the incentive regulation currently used towards a more prescriptive approach — it demonstrates how regulatory frameworks can and should evolve with changing market conditions.

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<sup>19</sup> See Jackie Ashley & Michelle Nock, “Hackers and Extreme Weather: Using a Risk Based Framework to Protect Consumers from Both” (2021) at 44, online (pdf): [IAEE Energy Forum <www.iaee.org/en/publications/newsletterl.aspx?id=978>](http://www.iaee.org/en/publications/newsletterl.aspx?id=978).

<sup>20</sup> See Ofgem, “RIIO-2 framework decision” (2018) at 30–33, online (pdf): [www.ofgem.gov.uk/sites/default/files/docs/2018/07/riio-2\\_july\\_decision\\_document\\_final\\_300718.pdf](http://www.ofgem.gov.uk/sites/default/files/docs/2018/07/riio-2_july_decision_document_final_300718.pdf).

<sup>21</sup> See Ofgem, “Future System Operator: Government and Ofgem’s response to consultation” (April 2022), online (pdf): [assets.publishing.service.gov.uk/media/624c840ce90e075f1120592f/future-system-operator-consultation-govt-response.pdf](http://assets.publishing.service.gov.uk/media/624c840ce90e075f1120592f/future-system-operator-consultation-govt-response.pdf).

<sup>22</sup> *Ibid.*

<sup>23</sup> See Ofgem, “Consultation on frameworks for future systems and network regulation: enabling an energy system for the future” (10 March 2023), online (pdf): [www.ofgem.gov.uk/sites/default/files/2023-03/Consultation%20on%20frameworks%20for%20future%20systems%20and%20network%20regulation.pdf](http://www.ofgem.gov.uk/sites/default/files/2023-03/Consultation%20on%20frameworks%20for%20future%20systems%20and%20network%20regulation.pdf).

### 3. Encourage Smart Energy Use

The third deliverable of a utility regulator is to encourage smart energy use, which Bonbright calls the “consumer-rationing criterion.”<sup>24</sup>

Bonbright describes this as having rates that encourage all consumption for which ratepayers are ready to pay avoidable, marginal cost, and deter any consumption for which ratepayers are not prepared to pay these costs. Total revenues should also cover total costs.

As Scott Hempling articulates:

Customers are not passive recipients of utility services. They create the demand that causes utilities to incur costs. Just as individual driving habits ease or impede the traffic flow, smoothing or slowing everyone else’s trip, customer consumption influences the utility’s cost structures, operations, capital plans and financing. Alert customers help make markets competitive, while indifferent customers support inertia — that powerful force that keeps the incumbent in place.<sup>25</sup>

So, how does the regulator know if it is encouraging smart energy use? Regulators can look at whether a utility, through its rate design and energy efficiency/electrification programs, is providing the right incentives to its customers.

Bonbright, when discussing his rate design principles,<sup>26</sup> states that efficiency is best supported when rates reflect marginal costs to the extent feasible. However, while this approach is theoretically sound, customers may not respond efficiently to accurate pricing signals due to behavioural biases, inattention, and transaction costs. Customer income levels can also affect price elasticity.<sup>27</sup>

In addition, even in competitive wholesale energy markets with transparent locational marginal prices, identifying the marginal cost of externalities (such as environmental emissions) and lumpy regional distribution investments can be difficult.

For example, utilities could end up in a circular situation of designing rates with only a small peak/off-peak differential on the basis that the customer response will be too small to defer network costs.<sup>28</sup>

As a result, the approach supported here is to adopt a more holistic approach. Instead of just evaluating the utility’s rate designs to see if they signal the appropriate marginal costs, the regulator could consider whether existing rates are promoting efficient consumer behaviour.

For example, would there be a net benefit from higher marginal rates (to promote energy efficiency), lower electricity marginal rates (to promote electrification), or different peak/off-peak differentials (to promote load shifting)?

Hempling states that utility regulators should regularly research and identify the best customer practices, then act to induce those behaviours.

Bonbright also supports this view, stating that it is virtually impossible to exaggerate the importance of the behavioral modification function of prices on all economic agents, noting that rates are often based on historical costs yet have their most profound impact on future behaviours.

The regulator should also consider other tools to promote smart energy use, such as utility targeted energy efficiency or fuel switching programs. The article “Effectiveness and Balance”<sup>29</sup> describes how regulators can evaluate utility energy efficiency programs to determine if they promote smart energy use.

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<sup>24</sup> Bonbright, *supra* note 2 at 205.

<sup>25</sup> See *supra* note 9 at 59. See also *supra* note 10.

<sup>26</sup> Bonbright, *supra* note 2.

<sup>27</sup> Zsuzsanna Csereklyei, “Price and income elasticities of residential and industrial electricity demand in the European Union” (February 2020), 137 Energy Policy.

<sup>28</sup> Jackie Nock, “Rate Setting for an Electrified World” (2022) at 31, online (pdf): *IAEE Energy Forum* <[www.iaee.org/en/publications/newsletterdl.aspx?id=1022](http://www.iaee.org/en/publications/newsletterdl.aspx?id=1022)>.

<sup>29</sup> Jackie Ashley, “Effectiveness and Balance: A Canadian Regulator’s Approach to Review of Energy Efficiency Funding Proposals” (2020) at 44, online (pdf): *IAEE Energy Forum* <[www.iaee.org/en/publications/newsletterdl.aspx?id=921](http://www.iaee.org/en/publications/newsletterdl.aspx?id=921)>.

Other questions a utility regulator could ask in determining if utility rates/programs encourage smart energy use include:

- Net metering rates: Is the retail rate a reasonable proxy for the value of electricity produced by the distributed generator (including network and ancillary benefits)?
- Electrification rates: Are these rates set between incremental costs (at a minimum) and stand-alone costs? Do these rates take into account customer competitive options?
- Electric Vehicle (EV) rates: Do the rates set for public charging stations reflect the benefit a utility may receive if they increase EV adoption and so increase revenues from home charging?

The regulator will also need to ensure utility rate offerings meet public environmental, social and governance expectations. As Bonbright notes, the development of sound ratemaking policy is cause for a resort to wise compromise, for it is not an exact science but a judicious blending of alternative goals.

#### **4. Aim for Energy Rates Consumers Can Count On, Without Surprises**

The fourth deliverable of a utility regulator is to aim for energy rates that consumers can count on, without surprises (stable and predictable).

Utility regulators have tools to promote rate stability that companies in competitive markets do not have. This includes allowing the utility to defer costs or revenues to future periods. However, caution should be exercised in using these tools as they could distort pricing signals and raise intergenerational equity considerations.

The regulator could therefore consider whether the regulatory framework provides the optimal level of rate stability, while preserving price signals to customers, appropriately balancing risks between customers and the utility, and supporting intergenerational equity.

In addition, the regulator can play a role in supporting rate predictability by ensuring rate designs are understandable to customers, and by educating customers of any anticipated significant future rate increases. This becomes more important where the clean energy transition puts upward pressures on rates.

#### **5. Promote a Fair Playing Field for all Involved in the Utility Sector**

Bonbright states that the first four principles are consumer focused — things that a customer would want anyway. The last principle is instead focused on supporting the history of ratemaking law as a means of protecting owners of public utility properties against confiscation of their assets.

Specifically, utilities have an obligation to serve customers in their territories, and the regulator has an obligation to allow them the opportunity for a fair return. Anything less than an opportunity to earn a fair return amounts to confiscation. The regulator should ensure it is delivering on this obligation for each utility it regulates.

The energy transition is raising questions about the appropriate regulatory approach to ensure fairness to investors, for example around potential stranded assets for gas utilities and the risk of building in advance of load that may not materialize, especially for electric utilities. For example, Ofgem states:

[w]hen considering depreciation we will focus on how best to balance the costs paid by existing and future consumers, taking account of the expected economic life of assets and uncertainty in the future use (and usefulness) of assets.<sup>30</sup>

The utility regulator must be alert to these issues and ensure that risk follows the reward.

### **III. KEY TAKEAWAYS**

The purpose of this article is to respond to the Mongolian regulator's question – how do utility regulators evaluate their own performance?

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<sup>30</sup> Ofgem, "Regulating energy networks for the future" (October 2010) at 36, 40, online (pdf): <[www.ofgem.gov.uk/sites/default/files/docs/2010/10/decision-doc\\_0.pdf](http://www.ofgem.gov.uk/sites/default/files/docs/2010/10/decision-doc_0.pdf)>.

This is not an easy question to answer. As Scott Hempling states: “[m]easurement of value is necessary, but the currency of value is elusive. Let’s keep thinking.”<sup>31</sup>

This article aims to contribute to this thinking by describing five key output deliverables of utility regulators, based on the seminal work of Bonbright:

- Ensure the financial stability of regulated utilities;
- Motivate utilities to operate efficiently and in the public interest;
- Encourage smart energy use;
- Aim for rates consumers can count on, without surprises; and
- Promote a fair playing field for all involved in the utility sector.<sup>32</sup>

We encourage utility regulators to evaluate their own performance against these deliverables. Evaluation against these deliverables enables regulators to focus their limited resources on areas where they can provide the most value — what gets measured, gets done. ■

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<sup>31</sup> *Supra* note 10.

<sup>32</sup> See *Bonbright*, *supra* note 2 at 203.

# A FAINT HOPE FOR DEVELOPMENT OF MACKENZIE DELTA GAS?

*Rowland J. Harrison, K.C.\**

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The abandonment of the Mackenzie Gas Project (MGP) in 2017 appeared, at the time, to sound a second death knell for the potential commercial development of the extensive natural gas reserves in the Mackenzie Delta. After a protracted regulatory review, over more than seven years, the MGP received final approval in 2011 and a certificate of public convenience and necessity, and other authorizations were issued by the National Energy Board (now known as the Canada Energy Regulator). By 2017, however, declining natural gas prices led to the MGP sponsors announcing that they had decided not to proceed.<sup>1</sup>

The demise of the MGP followed exactly four decades after the release of the 1977 report of the Mackenzie Valley Pipeline Inquiry, generally known as the Berger Report. Mr. Justice Thomas Berger had been appointed by the federal government to review a predecessor project, the Mackenzie Valley Pipeline, which was described at the time as what would be one of the biggest projects in the history of free enterprise. The Berger Report, *Northern Frontier, Northern Homeland*,<sup>2</sup> recommended that there should be a 10-year moratorium before any such pipeline was approved, principally to allow for the settlement of

Aboriginal land claims in the areas that would be impacted by the project. As a result, the Mackenzie Valley Pipeline proposal proceeded no further, until the MGP began to emerge in the early 2000s.

With two strikes, and natural gas prices continuing to be depressed, it has appeared unlikely that the Mackenzie Delta gas would ever be developed. Recently, however, a third, nascent development scenario has appeared. Rather than proposing another Mackenzie Valley pipeline to North American markets, the scenario contemplates the direct export of natural gas from existing onshore fields as liquefied natural gas (LNG) via an offshore liquefaction and loading facility.<sup>3</sup>

In 2019, the Government of the Northwest Territories (GNWT) contracted a pre-feasibility study “to determine if it would be viable to process natural gas from the onshore Mackenzie Delta and transport it for sale to international markets.”<sup>4</sup> The study was funded by both the GNWT and the federal government’s Canadian Northern Economic Development Agency (CanNor) and was completed in 2021. It concluded that “the responsible development and export of Mackenzie Delta Liquefied

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\* Rowland J. Harrison, Energy Regulation Consultant, Co-Managing Editor, *Energy Regulation Quarterly*.

<sup>1</sup> “Mackenzie gas project participants end joint venture”, *Imperial Newsroom* (22 December 2017), online: <news.imperialoil.ca/news-releases/news-releases/2017/Mackenzie-gas-project-participants-end-joint-venture/default.aspx>.

<sup>2</sup> Government of Canada, *Northern Frontier, Northern Homeland: The Report of the Mackenzie Valley Pipeline Inquiry*, vol 1 (1977) Ottawa, Privy Council Office (The Report of the Mackenzie Valley Pipeline Inquiry by the Honorable Thomas R Berger) online (pdf): <publications.gc.ca/collections/collection\_2015/bcp-pco/CP32-25-1977-1-eng.pdf>.

<sup>3</sup> Northwest Territories, Government of Northwest Territories, *Mackenzie Delta — Liquefied Natural Gas*, (7 July 2023), online (pdf): <www.iti.gov.nt.ca/sites/iti/files/1398-ITI-MDLNG-Report\_ENG.pdf>.

<sup>4</sup> *Ibid* at 4.

Natural Gas (MDLNG) has enough merit to, at least, warrant a full study.”<sup>5</sup>

The GNWT has released a document that it says is not intended to support or advance a specific LNG project “but to provide context for the GNWT’s prefeasibility study and its data and awareness among NWT residents and industry of the potential that exists in advancing liquefied natural gas from the Mackenzie Delta to international markets needing this energy alternative.”<sup>6</sup> At the same time, the document states that “[a]n export project would further assert Canada’s Arctic sovereignty and give international investors a compelling Northern option as they look to diversify their energy portfolios by backing developments with high Environmental, Social and Governance (ESG) standards in jurisdictions with robust regulatory regimes.”<sup>7</sup>

Significantly, noting that the Mackenzie Delta natural gas reserves are entirely located in the Inuvialuit Settlement Region (ISR), those reserves “would only move with Inuvialuit support, in whatever form that takes.”<sup>8</sup>

It is interesting to note here that the Inuvialuit Regional Corporation, through a subsidiary, is currently advancing the Inuvialuit Energy Security Project Ltd. (IESPL) to develop a gas well located in the Mackenzie Delta near Tuktoyaktuk<sup>9</sup> and transport the gas as compressed natural gas (CNG) by truck to consumers in the region, particularly in Inuvik. The IESPL, which was authorized by the Canada Energy Regulator in March this year, would replace Inuvik’s gas supply, which has been largely served by liquefied natural gas and propane trucked from southern Canada since production from the nearby Ikhil gas field began to decline in recent years.<sup>10</sup> Interestingly, the IESPL has been widely supported by regional organizations.<sup>11</sup> The extent to which

there would be regional support for a much different large-scale project such as MDLNG is, however, purely speculative at this time.

Should MDLNG ever proceed to a project proposal, the complexity of the regulatory framework, invoking multiple jurisdictions, would likely rival, if not exceed, that of the MGP, a process that extended over more than seven years. ■

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<sup>5</sup> *Ibid.*

<sup>6</sup> *Ibid* at 15.

<sup>7</sup> *Ibid* at 5.

<sup>8</sup> *Ibid.*

<sup>9</sup> The TUK M-18 well, which, ironically, was included in the reserves underpinning the MGP.

<sup>10</sup> Canada Energy Regulator, *Inuvialuit Energy Security Project Ltd. — Application for Authorization for Installation and Operation of the Energy Centre* (Commission Letter Decision C28698-1) (7 March 2024), online: <docs2.cer-rec.gc.ca/ll-eng/llisapi.dll/fetch/2000/90464/2487702/4236825/4236826/4264193/4439889/C28698-1\_Commission\_Letter\_Decision\_-\_IESPL\_-\_Inuvialuit\_Energy\_Security\_Project\_-\_Authorization\_for\_Installation\_and\_Operation\_of\_the\_Energy\_Centre\_-\_OA-1414-003\_-\_A8W7Y3.pdf?nodeid=4439890&cvnum=-2>.

<sup>11</sup> *Ibid* at 6.

# FOSSIL FUTURE, ALEX EPSTEIN

Kenneth A. Barry\*

## I. INTRODUCTION

One thing you have to concede about self-described philosopher and energy expert Alex Epstein is that he's unafraid to buck the consensus. His latest opus, *Fossil Fuels*<sup>1</sup>, subtitled "Why Global Human Flourishing Requires More Oil, Coal, and Natural Gas – Not Less," questions nearly every premise of the urgent campaign to replace conventional fuels with greener alternatives.<sup>2</sup> And those proclamations of alleged urgency confront the public continually. To take just one example out of today's headlines, the September 5, 2023 edition of *The Washington Post* blared: "*Climate-linked ills threaten humanity.*"<sup>3</sup> The same edition's lead editorial blasted the Texas school board for considering a curriculum standard stipulating that "human activities *can* [rather than *do*] influence climate."<sup>4</sup> The editorial acknowledges that Texas "always gets hot in the summer," but then intones:

[T]he severity and frequency of extreme heat will only increase as

the world warms, driven by burning fossil fuels.<sup>5</sup>

To Epstein, such stern mainstream media admonitions crystallize the problem of how the public is informed. To the author, fossil fuels aren't the menace — but rather the salvation — to human civilization. And not merely as a bridge to a carbon-free future: unlike the utility and even oil and gas industry spokespeople who embrace "net zero" goals for the longer term (while recognizing the need for hydrocarbons to fuel societies for at least a decade or two), Epstein argues, through the considerable length and breadth of *Fossil Future* (it runs 430 pages), that mankind will need a robust supply of fossil fuels indefinitely. Hence, while environmentalists might tag Epstein as an extreme climate denialist, he might turn the tables and label advocates of rapid fossil fuel elimination as energy deniers.

To be fair (and clear), Epstein does not deny that carbon emissions are contributing to the warming

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<sup>1</sup> Alexander J. Epstein, *Fossil Future: Why Global Human Flourishing Requires More Oil, Coal, and Natural Gas – Not Less*, (New York, Portfolio-Penguin, 2022)[*Fossil Future*].

<sup>2</sup> Many of Epstein's core arguments in favour of fossil fuels or against renewables were advanced in his first book, Alexander J. Epstein, *The Moral Case for Fossil Fuels*, (New York, Portfolio-Penguin, 2014); see also for a review of the book by Harvard Law professor, Jody Freeman, "A Critical Look at 'The Moral Case for Fossil Fuels'" (2015) 36:2 *Energy LJ* 327, online (pdf): <[eba-net.org/wp-content/uploads/2023/02/12-24-327-353-Freeman\\_FINAL-11.10.pdf](http://eba-net.org/wp-content/uploads/2023/02/12-24-327-353-Freeman_FINAL-11.10.pdf)>; see also for a rebuttal to the Freeman review by Epstein himself, Alex Epstein, "A Straw Man Attack on the Moral Case for Fossil Fuels" (2017) 38:1 *Energy LJ* 79, online (pdf): <[eba-net.org/wp-content/uploads/2023/02/17-79-94-Epstein-FINAL.pdf](http://eba-net.org/wp-content/uploads/2023/02/17-79-94-Epstein-FINAL.pdf)>.

<sup>3</sup> Annie Gowen, Niko Kommenda & Saiyna Bashir, "Climate-Linked Ills Threaten Humanity" *The Washington Post* (5 September 2023), online: <[washingtonpost.com/climate-environment/interactive/2023/pakistan-extreme-heat-health-impacts-death](https://www.washingtonpost.com/climate-environment/interactive/2023/pakistan-extreme-heat-health-impacts-death/)>.

<sup>4</sup> Editorial Board, "School officials are still arguing about teaching climate change" *The Washington Post* (6 September 2023), online: <[washingtonpost.com/opinions/2023/09/06/texas-climate-change-textbooks](https://www.washingtonpost.com/opinions/2023/09/06/texas-climate-change-textbooks/)>.

<sup>5</sup> *Ibid.* The editorial also scolds certain Texas school board members for suggesting that school books should discuss the "benefits" of burning fossil fuels or that "naturally occurring climate change can lead to increasing temperatures," inasmuch as that would "downplay conclusive research showing fossil fuel use is rapidly warming the planet."



of the planet. Instead, in a one-hundred-page overture before the book gets down to brass tacks, Epstein develops his core thesis that the benefits bestowed by fossil fuels on economic development and basic human comfort far outweigh any environmental drawbacks; and besides, he insists, negative impacts are “masterable” through utilization of fossil fuels.

## II. OPENING SHOTS

The one-hundred-page opening (Part I of *Fossil Future*) is essentially an elaboration of the book’s not-so-succinct subtitle. Epstein starts out with reflections on how our “knowledge system” (a favorite Epstein phrase) works in practice. A chain of information on scientific matters begins with “experts,” whose analysis is passed on to “disseminators” (e.g., mainstream newspaper reporters, educators, and spokespeople for scientific institutions), and ultimately extends to “evaluators” (editorial writers, other public commentators, and policymakers).<sup>6</sup> Epstein repeatedly decries a “chain of distortions” in this knowledge system that works its way down from the experts through to the evaluators.<sup>7</sup>

The author goes on to note that “billions of people are suffering and dying for lack of cost-effective energy”<sup>8</sup> and to criticize “our designated experts” (individuals or institutions chosen by the “knowledge system” to opine on the implications of research in the climate field) for persistently ignoring the benefits of fossil fuels.<sup>9</sup> The passage proceeds to list a gallery of well-known “designated experts” (e.g., James Hansen, Michael Mann, Al Gore, Amory Lovins, and others) who have stressed the

catastrophic consequences of continued reliance on fossil fuels while failing, says the author, in their “moral case” for *eliminating* these fuels to “incorporate [...] the unique, massive, and desperately needed benefits of fossil fuels.”<sup>10</sup>

Adding to the perplexity of the designated experts’ advice, Epstein injects, is the “fact that our knowledge system” (often led by the same experts) “regularly supports the elimination of the two most cost-effective, non-CO<sub>2</sub>-emitting alternatives to fossil fuels — alternatives you’d expect anyone concerned [about carbon emissions] to eagerly champion: nuclear energy and hydroelectric energy.”<sup>11</sup> Moreover, while Epstein concedes the “knowledge system in theory” supports wind and solar energy, “in practice” these technologies “face widespread local opposition” because they require mining, the consumption of “huge amounts of space,” and entail “unprecedented amounts of long-distance electric transmission lines.”<sup>12</sup>

Another charge by Epstein is that disseminators and evaluators defer all too readily to “catastrophizers” of fossil fuels’ “side effects” (two more of the book’s favorite terms). In Part I,<sup>13</sup> the author condemns such “catastrophizing” while asserting that “our knowledge system’s real track record on climate change is 180 degrees wrong,” guilty of “wildly overstating side-effects.”<sup>14</sup>

To sum up, the book’s opening sections indict a “knowledge system” writ large for painting a picture that, in the author’s telling, privileges advice from the wrong experts and showcases leading voices that are not only anti-energy but, when it comes right down to it, anti-human.

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<sup>6</sup> *Supra* note 1.

<sup>7</sup> Epstein joins the chorus of conservative critics in calling out the reports of the U.N.’s Intergovernmental Panel on Climate Change (IPCC) as a “chain of distortions” omitting “crucial facts” (such as “climate-related deaths are plummeting”), *ibid* at 15. The “distortions of evaluation,” he goes on to insist, are “the worst and most damaging...with fossil fuels in particular”, *ibid*.

<sup>8</sup> *Ibid* at 26.

<sup>9</sup> *Ibid* at 29–30.

<sup>10</sup> *Ibid* at 30.

<sup>11</sup> *Ibid* at 34.

<sup>12</sup> *Ibid* at 37.

<sup>13</sup> *Ibid* at 42.

<sup>14</sup> *Ibid* at 54 (noting that here, Epstein catalogs a series of dire predictions from well-known experts that have not been realized, at least in the timeframes originally predicted. He uses this material to undermine the credibility of climate change experts warning of doomsday scenarios. It seems fair to add that the headlines and reportage on certain extreme weather events in 2023 reinforce the notion that climate change is upon us, and the consequences are dire. Presumably, Epstein would reply that the reportage is hyperbolic and lacks context).

### III. WHY ARE ENVIRONMENTAL ADVOCATES SO “ANTI-HUMAN”?

Epstein does not pose this precise question. But that’s the underlying quandary in an extended section labeled “The Anti-Impact Framework.”<sup>15</sup> The discussion that ensues seems foundational to everything Epstein has to say about the energy choices before us and the force fields buffeting them. It’s here that the author most conspicuously dons his philosopher’s hat. His central — and unquestionably controversial — contention is that those advocating rapid eliminating fossil fuels are fundamentally “anti-human” regarding their “primary moral goal.”<sup>16</sup>

Epstein spins this theory out by arguing that environmentalists<sup>17</sup> look at all energy development projects through an *anti-impact* prism. In his view, they portray a concept of nature that, undisturbed, maintains a “delicate balance” and, hence, that human interventions with a significant environmental impact threaten to topple that balance.<sup>18</sup> The author has so much to say on this topic that just to summarize it would take pages. But a couple of excerpts capture the flavour. Epstein quotes from a favourable review of *The End of Nature* (1989) by noted environmentalist Bill McKibben as follows:

Human happiness, and certainly human fecundity, are not as important as a wild and healthy planet... Until such time as *Homo sapiens* should decide to rejoin nature, some of us can only hope for the right virus to come along.<sup>19</sup>

Epstein quickly acknowledges that such naked examples of “explicitly naming our primary goal as eliminating human impact” are “relatively rare,”<sup>20</sup> but he offers up this tidbit as telling evidence of the real agenda of radical naturalists (and by extension the most outspoken anti-fossil fuel advocates). Vaguer exhortations such as “going green,” Epstein asserts, cloak the more radical *no-impact* agenda but, in practice, “absolutely do mean eliminating all types of human impacts — including the vast majority of human impacts that are beneficial to human flourishing.”<sup>21</sup>

Returning to the innate tension between environmental protection and energy resource development, Epstein underscores that *every* type of energy, whether conventional or renewable, entails significant impact on the natural world:

All forms of cost-effective energy involve developing nature — transforming it in a significant way... Crucially, even when the mainstream knowledge system doesn’t actively support stopping some development, it is highly sympathetic to the people trying to stop it — because they are seeking to eliminate some form of human impact, which is considered to be the epitome of morality.<sup>22</sup>

Conversely, laments the author, the “knowledge system” views the “significant side effects of cost-effective energy as immoral and in need of elimination.”<sup>23</sup> Epstein moreover portrays as disingenuous the contrast his adversaries draw between a benign, nurturing nature and detrimental human impacts. “They know,”

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<sup>15</sup> *Ibid* at 74–105.

<sup>16</sup> *Ibid* at 75.

<sup>17</sup> In this review, the term “environmentalists” is used interchangeably with anti-fossil fuel advocates, although the latter may be best viewed as a major branch or offshoot of the environmental movement.

<sup>18</sup> The book more expansively elaborates the “delicate balance” view with some of the clunkier terminology one encounters between its covers, see *Fossil Future*, *supra* note 1 at 92–95. Epstein refers to a “delicate nurturer assumption” employed by anti-impact advocates that, he contends, distorts the trade-offs between development and ecological preservation by implying an idealized harmony of nature and its creatures in its pristine state — which, in turn, is subverted by humans viewed under a “parasite-polluter assumption.”

<sup>19</sup> *Fossil Future*, *supra* note 1 at 81.

<sup>20</sup> *Ibid*.

<sup>21</sup> *Ibid*.

<sup>22</sup> *Ibid* at 83–84.

<sup>23</sup> *Ibid* at 87.

he claims, that “climate danger used to be a menace to human life that most of us in the ‘empowered world’ cannot imagine today” and “by the modern standard of living [unimpacted nature] is a barely livable place.”<sup>24</sup>

Near the end of this discussion, the author exhorts us to discard the “anti-impact framework” that, he says, unduly shapes the discourse about climate change and the “side effects” of energy production and consumption. It should be replaced, he posits, with a “human flourishing framework” that considers the “full context” by “weighing the benefits and side-effects of different forms of energy in relation to human flourishing — neither ignoring nor catastrophizing anything.”<sup>25</sup>

Epstein closes Part I of *Fossil Future* by finally unveiling his mission or “project,” as he calls it. He relates that about 14 years earlier, he commenced a study of the energy choices facing society and came swiftly to the conclusions that (1) the future of fossil fuels in the energy mix is an extremely important issue, but (2) the “mainstream knowledge system,” incorporating its “anti-impact framework [is] guaranteed to give us terrible, anti-human guidance and its prescription of rapidly eliminating fossil fuels could well be catastrophically bad.”<sup>26</sup> He then looked for “some general expert” who could provide a more enlightened, “full-context evaluation” but found that specialists in the topics that matter most (“energy, economics, environmental science, climate science”) were “operating on the anti-impact framework” Epstein so thoroughly distrusts.<sup>27</sup> It was at this point that he decided to add “general expert on fossil fuels” to his philosopher shingle, “drawing on the best sources and specialists I could find.”<sup>28</sup> The result is *Fossil Future*, a “synthesis of everything that [Epstein] learned.”<sup>29</sup>

#### IV. ABOUT THAT BOUNTY OF BENEFITS

Part II of *Fossil Fuels*<sup>30</sup> undertakes to educate the readers more broadly on the benefits of burning fossil fuels. There is nothing understated in Epstein’s expository style. Although such “benefits” have been a regular drumbeat of the preceding pages,<sup>31</sup> the author confides that “those benefits are far, far greater than I have been able to explain so far.” Manifestly, Epstein isn’t reluctant to raise the bar he’s attempting to clear.

He begins with some reflections on the meaning of “livable planet” — a phrase he perceives as exemplifying “vague, confusing environmental terminology.” The term intertwines two different things, he continues: a planet that is “highly livable for human beings” and an “unimpacted” planet that is “allegedly more livable” for a wide range of species.<sup>32</sup> It’s the former version, with *human beings* and their flourishing at the epicenter, that Epstein prioritizes. The question of what defines a livable world and what is conducive to it occupies the next several pages. The qualities that serve as his measuring rods are (1) “*nourishing*”; (2) “*safe*”; and (3) “*opportunity-filled*.”<sup>33</sup> Not unexpectedly, Epstein views fossil fuel development and utilization as the portal to attaining these habitability goals.

The chapter places side-by-side graphs depicting life expectancy, world population, and GDP-per capita over the last two millennia and observes that they mirror a graph of carbon dioxide emissions, with “hockey stick” increases beginning around the late 19<sup>th</sup> Century.<sup>34</sup> These correlations, he concludes, reflect “an incredible improvement in Earth’s livability,” notwithstanding “a lot of [human] impact, which fossil fuel use certainly does...”<sup>35</sup> Yet,

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<sup>24</sup> *Ibid* at 94.

<sup>25</sup> *Ibid* at 100.

<sup>26</sup> *Ibid* at 103–04.

<sup>27</sup> *Ibid* at 104.

<sup>28</sup> *Ibid*.

<sup>29</sup> *Ibid*.

<sup>30</sup> *Ibid* at 109. Part II begins with “Sec. 4 – Our Unnaturally Livable Fossil-Fueled World.”

<sup>31</sup> *Ibid* at 9. The heading of a passage begins with “The Unique, Massive, and Desperately Needed Benefits of Fossil Fuels.”

<sup>32</sup> *Ibid* at 114.

<sup>33</sup> *Ibid* at 115.

<sup>34</sup> *Ibid* at 118.

<sup>35</sup> *Ibid* at 118–19.

to Epstein’s dismay, the “knowledge system and its designated experts” miss the salience of these parallels by doggedly sticking to their “anti-impact framework”:

[E]ven though Earth is more livable than ever, it’s widely evaluated as “destroyed” because we’ve impacted it so much — even though that impact has brought billions of people out of poverty and made them far safer from climate danger.<sup>36</sup>

Returning to the correlation between rising CO<sub>2</sub> levels and his proxies for planetary “livability,” Epstein first concedes that correlations don’t necessarily *prove* causation,<sup>37</sup> but then submits they’re “often reflections” of causation. “In this case,” he proceeds, “the relationship is causal to a degree that almost no one appreciates: the ultra-cost-effective fossil fuel energy emitting the CO<sub>2</sub> is literally driving the world’s unprecedented, increasing livability.”<sup>38</sup> From there, *Fossil Future* enlarges on how the invention and innovation of machines has succeeded, in innumerable ways, in displacing manual labor, with humanity reaping the benefits of productivity. This march of progress, Epstein emphasizes, could not have taken place without fossil fuels to produce and then power the machines.<sup>39</sup>

## V. STACKING UP THE BENEFITS AGAINST THE “SIDE-EFFECTS”

As has been seen, *Fossil Fuels* takes a dim view of the “knowledge system” that shapes the general public’s impressions about thermal energy and its tradeoffs or drawbacks. Epstein’s ideas on getting to a more balanced view occupies much of the second half of the book; but the closing pages of Chapter 4 (“Our Unnaturally

Livable Fossil-Fueled World”) softens the ground with some tough rhetoric on how that knowledge system portrays the benefits side of the equation.

In a discussion on human health impacts posed by fossil fuel combustion emissions, the author first points out that, apart from carbon dioxide, “air pollution in the U.S. has declined dramatically.”<sup>40</sup> Another tack is the assertion that “fossil fuel energy’s side-effects are increasingly neutralized by its benefits.” The “neutralized” concept has multiple facets. One is that he doesn’t necessarily mean *reducing* “the effect itself” but rather the negative consequences thereof.<sup>41</sup> Another is a reminder of benefits (e.g., to human health and well-being) enabled by fossil fuels. For example, he chafes at the studies claiming to show reduced life expectancy from coal emissions in China, insisting that “any accurate study” would show dramatic *increases* in life expectancy, adding:

That we never hear this illustrates once again how worthless our anti-impact, anti-energy, and ultimately anti-human knowledge system is...<sup>42</sup>

Epstein similarly exhibits little patience for studies that assert fossil fuel prices fail to reflect negative “externalities.” To be fair, he says, such studies should also take pains to reflect the *positive* externalities (in other words, the economic value provided by a given unit of oil, natural gas, or coal). If we paid for the positive externalities, he muses, “we would be giving significant chunks of our life savings to the fossil fuel industry.”<sup>43</sup>

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<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid* at 120.

<sup>38</sup> *Ibid.* Answering the fact that improvements in life expectancy, etc. are “invariably ascribed to crucial factors... such as scientific discoveries, technological innovation, improved medical care, and improved sanitation,” Epstein insists they have “overwhelmingly depended on and will continue to depend on ultra-cost-effective energy production from fossil fuels or their equal.”

<sup>39</sup> This will seem uncontroversial to most readers; but presumably Epstein hammers home the point because fossil fuels have become such a flashpoint (and subject of denigration) in the current political discourse.

<sup>40</sup> *Fossil Future*, *supra* note 1 at 166.

<sup>41</sup> *Ibid* at 168.

<sup>42</sup> *Ibid* at 170.

<sup>43</sup> *Ibid* at 172. At this point, Epstein expresses scorn for the “smug but inane refrain” that market prices for fossil fuels fail to reflect the negative externalities.

## VI. “COST-EFFECTIVENESS” OF FOSSIL FUELS VS. ALTERNATIVES

Up to this point, Epstein has sprinkled his book generously with references to the “ultra” cost-effectiveness of fossil fuels. In Chapter 5,<sup>44</sup> he goes beyond the bare assertion and wades more deeply into this facet of his overall benefits argument. Necessarily, his cost-effectiveness stance must thwart the commonly heard claim from anti-fossil fuel advocates that renewables not only are ushering in a greener, cleaner future but are already *more* competitive than conventional fuels.<sup>45</sup> This economics debate may be of greater interest to energy professionals than Epstein’s retrospective on the historic contributions of coal, oil, and natural gas to civilization.

Much of this section is devoted to the natural advantages of fossil fuels from a chemical and physics perspective. In contrast with the “intermittent flow” of sunlight and wind that requires conversion, transmission, and “massive” storage,<sup>46</sup> observes Epstein, fossil fuels already have “naturally stored energy of ancient organisms, which means that ultimately they are *naturally stored sunlight*” and provide a “mass-energy-storage system for us.”<sup>47</sup> Another critical advantage is the “energy density” of fossil fuels, facilitating economical, global transportation.<sup>48</sup> Yet another leg up for fossil fuels is simply that, because they’ve been around for such a long time, an “unrivaled amount of economic innovation and achievement has gone into harnessing” their physical attributes, creating “an incredibly high bar for potential

alternatives...”<sup>49</sup> In other words, they have incumbency on their side.

Finally, these fuels (routinely referred to as “finite resources” twenty-five or more years ago) “exist in staggering amounts,” the author insists.<sup>50</sup> Even though statements on current “reserves” may speak only of *decades* of availability, Epstein distinguishes “reserves” from “deposits,” with the latter being a better indicator of future abundance; and in that regard, *Fossil Future* assures us that “deposits...are absolutely huge” providing fuel for “centuries to come.”<sup>51</sup>

The book cites the “shale energy revolution” as a vivid example of how technological advances have accelerated oil and natural gas production “in the last decade, especially in the United States.”<sup>52</sup> This is certainly valid, but Epstein could be more nuanced when he asserts simply that “[i]n 2019, the U.S. was a net oil exporter.”<sup>53</sup> The reality is more complicated. The Energy Information Administration (EIA) website (a source Epstein relies on) indicates that the U.S. was a net *overall energy* exporter that year, and in November 2019, was a net exporter of *petroleum products*. But it was still a net importer of *crude oil* (notwithstanding major strides in reducing the levels of imports since around 2005).<sup>54</sup>

## VII. THE CASE AGAINST A HEAVY PUSH TOWARDS RENEWABLES

Chapter 6 “Alternatives: Distortions versus Realities” tackles a related, no less pivotal

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<sup>44</sup> *Ibid* at 174, ch 5, “The Unique and Expanding Cost-Effectiveness of Fossil Fuels”.

<sup>45</sup> See *ibid*, ch 6, “Alternatives: Distortions versus Reality”. The book goes another round against renewables advocates contending that affordable, practical, and greener alternatives are already present and deployable *en masse*.

<sup>46</sup> *Ibid* at 182–85.

<sup>47</sup> *Ibid* at 185.

<sup>48</sup> *Ibid* at 186–87.

<sup>49</sup> *Ibid* at 192.

<sup>50</sup> *Ibid*. The only other fuel with comparable attributes, says Epstein, is nuclear energy, but “it is strangled by governments to the point of near criminalization”, *ibid* at 188.

<sup>51</sup> *Ibid* at 199. This assertion comes with a caveat: Epstein acknowledges that the existence of “almost limitless deposits” doesn’t necessarily mean they can be produced cost-effectively; but he is nonetheless confident that “unprecedented innovation and progress” in energy technology will enable their production, *ibid* at 200.

<sup>52</sup> *Ibid* at 200.

<sup>53</sup> *Ibid*.

<sup>54</sup> See Energy Information Administration, “Despite the U.S. becoming a net petroleum exporter, most regions are still net importers” (6 February 2020), online (blog): <[eia.gov/todayinenergy/detail.php?id=42735](https://www.eia.gov/todayinenergy/detail.php?id=42735)>. Therein, the EIA states that in November 2019, the nation imported 5.8 million barrels per day of crude oil, while exporting 3.0 million barrels per day — a net deficit.

subject: what is a *realistic* expectation for the penetration of renewables or “green” energy in the next ten years and beyond? *Fossil Future* goes up against the familiar battle cries of “green power” advocates: that the climate crisis is already upon us; that harm to the atmosphere from fossil fuel emissions is approaching an irreversible inflection point; that the only way out is a radical commitment to non-carbon-emitting alternatives; that the wind and solar energy — at least to power the grid — are more than equal to the task; and that a comparably aggressive commitment to electric vehicles (EVs) will speed the relegation of oil to a far lesser role in fuelling mobility.

Epstein begins by deriding projections embraced by the “knowledge system” that green energy will *totally displace* conventional fuels in “less than thirty years”; and he is even more dumbfounded by “a group of prominent academics and other influential people” contending that the electric grid can be totally powered by renewables at the end of this decade.<sup>55</sup> Thus, a central aspect of the author’s “project” is to debunk what he paints as “the incredible claims of our anti-energy knowledge system.”<sup>56</sup>

To do so, Epstein points up an assortment of fallacies he alleges run through such predictions. One is that “efficiency” is the “lowest hanging fruit” that will result in reduced energy usage.<sup>57</sup> The author regards this as delusional because the third world has billions of people that are currently underserved or unserved by cost-effective fossil fuel-burning systems and can be expected to demand much more conventional energy as they develop. Secondly, Epstein finds it incongruous or worse that those insisting on advancing greener, low-carbon technologies (1) exclude nuclear and hydro power (presumably because they aren’t “low-impact” resources); and (2) shrug off “global opposition” to solar and wind based on their total lifecycle impacts on nature.<sup>58</sup> Moreover, Epstein argues at length that wind

and solar energy aren’t nearly as competitive as they are cracked up to be.

The substance of Epstein’s argument is probably familiar territory to longstanding students of energy physics and economics, but less so to readers who largely get their information on energy and the environment from the newspapers, political talk shows, and internet polemics. His chief points can be summarized as follows:

- Low current penetration. Despite “many decades on the market,” wind and solar produce only around 3% of the world’s energy. That contribution is almost entirely electricity, and with “no current competition with many of fossil fuels’ mobility-related or industrial-related uses.” To make headway in those applications and completely replace fossil fuels, generation at a “far, far lower cost” and the invention of cost-effective, low-carbon transportation machines would be necessary.<sup>59</sup>
- Rapid growth of wind and solar in context. While wind and solar power exponents boast of rapid expansion in their deployment, these double-digit annual growth rates are off a low base. Epstein notes: “[H]istory shows us that in business it’s very common for something to have a temporarily rapid rate of growth when its base is small and then taper off as it grows.”<sup>60</sup>
- Illusion of prices falling to levels below thermal generation. As to the “constant headlines about solar and wind already falling to prices that are cheaper than nuclear,...coal...[or] gas,” Epstein highlights several counterpoints. First, wind and solar are the beneficiaries of “massive government preferences” in the form of subsidies, as well as mandated incorporation in the form of renewable portfolio standards. Yet,

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<sup>55</sup> *Fossil Future*, *supra* note 1 at 204.

<sup>56</sup> *Ibid* at 205.

<sup>57</sup> *Ibid* at 206.

<sup>58</sup> *Ibid* at 206–07.

<sup>59</sup> *Ibid* at 209. By “mobility-related” uses that aren’t currently competitive running on electricity, Epstein apparently excludes most EVs (passenger vehicles and lighter-duty trucks).

<sup>60</sup> *Ibid* at 210.

he suggests, the leaders in wind and solar penetration — Germany and Denmark in Europe, California in the U.S. — have the highest retail electricity prices. “Why,” he asks, “do solar and wind seem to always make electricity more expensive if they’re actually so cheap?” The answer, he continues, lies in the “diluteness” and intermittency of wind and solar energy, entailing larger investments in transmission networks and the maintenance of fossil-fuel backup generation. There are three “approaches,” the book claims, to working around the inherent shortcomings of wind and solar: relying on (1) “some controllable source of energy” (e.g., fossil fuels); (2) a “diverse, distant, enormous” network of wind and solar generation; or (3) a “man-made storage system” holding enough renewable energy in reserve to meet demand. Of these, Epstein concludes, only the first approach “has been implemented at *any* cost.”<sup>61</sup>

- Weather and sunlight match up poorly with end-use demand. Epstein anecdotally suggests that recent regional U.S. blackouts — for example, in Texas and California — can be traced to low outputs of wind or solar energy. He maintains that the wind doesn’t blow very much when the weather is very cold or very hot, and notes that there isn’t much sunshine in Germany at all in the cold winter months. As to the latter, he posits that “intermittent solar and wind can go to near zero for extended periods of time” with the consequence that they “do not replace existing, controllable energy infrastructure.”<sup>62</sup>

Epstein’s conclusions are severe. “Is it any wonder,” he ponders, “that the more solar and wind a country uses, the higher its costs?”<sup>63</sup> Not only do such ventures entail “massive infrastructure duplication,” he maintains, but also necessitate cycling thermal generation up or down to mirror the ebbs and flows of intermittent generation — “an efficiency killer, just like stop-and-go traffic kills your car’s fuel efficiency.”<sup>64</sup> A few pages later, he denounces wind and solar as “cost-adding, reliability-decreasing parasites” that aren’t even close to having the ability to “power a grid on their own.”<sup>65</sup> For good measure, he labels as a “fraud” the practice of large corporations such as Apple, Google, and Bank of America in asserting they’re operating on 100% renewable energy, leading consumers to think a fossil-free energy reliance is actually achievable.<sup>66</sup>

An adjacent argument is Epstein’s portrait of battery storage: this is no practical answer to wind and solar inherent intermittency, he contends, but rather a disingenuous myth. In theory, he explains, system designers could construct a tremendous amount of wind and solar generation — enough to meet not only current demands but also fill battery storage. But doing so is “completely cost-prohibitive” based on current know-how, “which is why no one has come close to even trying it.”<sup>67</sup> After running through some figures to demonstrate the point, the author concludes:

Thus, solar and wind replacing fuels isn’t a fantastic breakthrough; it’s a thoroughly dishonest fantasy — one that is used to advance anti-impact anti-energy policies.<sup>68</sup>

In the concluding page of this section, Epstein cites examples of soured experiments in full-on reliance on solar generation in certain third-world countries, and contends that other

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<sup>61</sup> *Ibid* at 210–15.

<sup>62</sup> *Ibid* at 214–15.

<sup>63</sup> *Ibid* at 216.

<sup>64</sup> *Ibid*.

<sup>65</sup> *Ibid* at 219.

<sup>66</sup> *Ibid* at 219–20. Epstein claims that all Apple, et al. are doing is paying utilities extra to *credit* the portion of their generation that comes from renewables to customers willing to pay extra. He adds that corporate assertions of 100% renewable energy ignore, to take one example, Apple’s use of large transport vehicles to ship parts and products around and their bulk of their manufacturing in China, where “64% of electricity is from coal”, *ibid* at 220.

<sup>67</sup> *Ibid* at 221.

<sup>68</sup> *Ibid* at 223.



modes of renewable energy — beyond wind and solar — either (1) can't realistically be expected to displace significant amounts of fossil fuels (biomass and geothermal);<sup>69</sup> or (2) have been wrongheadedly suppressed or dismissed by green power advocates (hydro-electricity, nuclear) because of their unacceptable human impact on nature.<sup>70</sup>

The author directs some vehemence particularly towards the green movement's anti-nuclear bias, since this is one technology that exploits abundant raw materials, taps into a very dense energy source, and doesn't emit greenhouse gases.<sup>71</sup> Moreover, Epstein insists, safety concerns are vastly overblown — labeling nuclear “the safest form of energy.”<sup>72</sup> The real issue, he suggests, is that clean energy advocates, with only a few exceptions, dismiss nuclear as “morally unacceptable” because it tampers so profoundly with nature. Probing the practicality of nuclear further, the author submits that its operational costs have been needlessly ramped up because it's been swaddled in government regulations (due to the latter's “pseudoscientific opposition”).<sup>73</sup> Summing up this ideological logjam, Epstein does not mince words:

The anti-impact green energy movement is therefore a menace to our future, spreading deadly lies about energy to achieve deadly, anti-energy goals.<sup>74</sup>

As to the potential for carbon capture technology to turn fossil fuel combustion into “clean energy,” it is somewhat surprising that Epstein sees scarcely a glimmer of hope in its economics. Large oil and gas companies and coal-burning utilities — not to mention various governments — have invested in R&D and test projects to make carbon capture and

sequestration (CCS) commercially viable. But the author sees just limited scope for CCS, since it can be economical through the selling of CO<sub>2</sub> streams to oil producers for enhanced oil field recovery. While that can be cost-effective, he maintains that it can only work for a small amount of emissions (because the market is limited).<sup>75</sup> The economics of machines that suck CO<sub>2</sub> directly out of the atmosphere (i.e., “air capture”) are far too expensive, he adds, to justify themselves.<sup>76</sup>

### VIII. CLIMATE CHANGE: MENACE OR MANAGEABLE?

In its last three chapters, *Fossil Future* addresses three unquestionably important matters provoking the climate change debate. They all boil down, in one way or another, to how big a problem climate change really is. Is it an existential threat — a doomsday scenario for a habitable Planet Earth unless tackled decisively and pronto? Or is the threat exaggerated and, to the extent warmer temperatures are actually in store, technologically manageable and, for naturally colder regions, a blessing in disguise?

Epstein falls firmly into the latter camp. In Chapter 7 “The Enormous Power of Fossil-Fueled Mastery”<sup>77</sup>, he suggests that we shouldn't refer to civilization's responses as “adaptation” (which sounds “trivial” or lame to his ears), but rather as “climate mastery,” with its more emphatic, *we've-got-this* resonance.<sup>78</sup> He relates that climate and weather have always had their dangerous sides, but human ingenuity has enabled mankind, over time, to engineer more and better ways to cope with temperature extremes, storms, and droughts. The result has been a sharp reduction in the incidence of deaths from climate-related phenomena over the last hundred years (a period, he notes, where

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<sup>69</sup> There is an “advanced geothermal” concept, the book points out, that would drill very deep wells to access high-temperature, high-pressure water that could, in theory, drive generation. But it's yet to be commercialized, he notes, and — if it were shown to be practicable — would likely become the target of environmental advocates because it employs fracking and would thus arouse anti-impact sentiments, *ibid* at 230–31.

<sup>70</sup> *Ibid* at 226–44.

<sup>71</sup> *Ibid* at 234.

<sup>72</sup> *Ibid* at 235.

<sup>73</sup> *Ibid* at 236.

<sup>74</sup> *Ibid* at 237.

<sup>75</sup> *Ibid* at 239.

<sup>76</sup> *Ibid* at 240.

<sup>77</sup> *Ibid* at 247–89, ch 7.

<sup>78</sup> *Ibid* at 259, 285.



atmospheric concentrations of carbon dioxide have gone from purportedly “acceptable” to “unacceptable” levels).<sup>79</sup> The passage is buttressed with harrowing accounts of early 20<sup>th</sup> century hot and cold waves resulting in widespread death and environmental destruction — catastrophes that wouldn’t occur in what the author likes to call our fossil-fuelled modern world.<sup>80</sup>

Drought, wildfires, floods have likewise been “mastered”, or at least mitigated, over the same period, Chapter 7 goes on to argue. And while property damage is up if measured in monetary terms (as property development — especially in zones more exposed to storms, floods, and fires — has rapidly expanded), the damages have remained low as a proportion of income or GDP, and hence not “a catastrophic, let alone apocalyptic, problem”<sup>81</sup>. What especially irks Epstein is that the “knowledge system” and its disseminators refuse to acknowledge the “climate mastery abilities that will come with fossil fuels’ climate side-effects”<sup>82</sup>. As a result of this systematic “mastery denial”, worries the author. The public gets only a partial (and hence misleading) view of what continued reliance on fossil fuels implicates.<sup>83</sup>

Passing that threshold, Epstein gets to the heart of the matter: his critique of the predominant narrative on the extent and impact of climate change. His first thrust, Chapter 8 “The Problem of Systemic Climate Distortion”<sup>84</sup>, is a variation on the book’s familiar theme — pushback to the narrative that virtually all scientists agree that unchecked greenhouse gas emissions present a dire threat to the environment and humanity. Since Epstein isn’t a scientist himself, but rather an avid consumer of the relevant literature, he goes indirectly about the task of upending the premise that the “science is

in”, by citing comments of scientists who have challenged the consensus.

His first point repeats, with renewed emphasis, is the fact that proponents of strong action to reduce use of fossil fuels accentuate the negative aspects of increased CO<sub>2</sub> emissions but ignore the “neutral and positive impacts.”<sup>85</sup> The main “positive” for him is that the emissions are both a “warming gas” and a “fertilizing gas” (stimulating significantly more global plant growth)<sup>86</sup>. For colder climates, incremental warming, suggests Epstein, will enhance comfort and add to the growing season. The chapter also underscores the uncertainty of how various factors impact weather and long-term climate trends, by themselves and in their interactions.<sup>87</sup> The author fumes at the persistence of governmental institutions in largely ignoring the benefits of increased greenhouse gas emissions, from research funding to the IPCC’s report on climate change effects:

The negatively distorted funding of research in the mainstream knowledge system leads to benefit denial, as well as overstatement of negatives...and when research is distorted to ignore the benefits of fossil fuels, the rest of the knowledge system will follow — including synthesis where the IPCC downplays the extremely significant potential of global greening for human flourishing and dissemination, where the IPCC’s latest Summary for Policymakers doesn’t even mention the benefits of greening at all.<sup>88</sup>

In addition to citing the protests of eminent climate scientists who’ve dissented from the

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<sup>79</sup> *Ibid* at 260–65.

<sup>80</sup> *Ibid*.

<sup>81</sup> *Ibid* at 270.

<sup>82</sup> *Ibid* at 284.

<sup>83</sup> *Ibid* at 288–89.

<sup>84</sup> *Ibid* at 290–318, ch 8.

<sup>85</sup> *Ibid* at 291.

<sup>86</sup> *Ibid* at 297.

<sup>87</sup> *Ibid* at 292–93. Epstein also points up the spotty history of temperature data over long stretches of time: satellite data on atmospheric temperatures has only been available since 1979, and thermometer readings around the globe “for even the last hundred year” have been “limited”, *ibid* at 293.

<sup>88</sup> *Ibid* at 300.

prevailing consensus<sup>89</sup>, Epstein takes issue with the frequently seen claim that “97 percent of scientists” concur that human activity is causing global warming (since such surveys lump together respondents who believe it’s a huge problem with those who concede fossil fuel emissions increase warming but don’t necessarily believe it is the major driver or a problem of unmanageable dimensions).<sup>90</sup> Finally, Epstein tears into the Intergovernmental Panel on Climate Change (IPCC) for its practice of writing up, with each report, a “Summary for Policymakers” that, in the author’s view, is more a political document (hyping the severity of impending climate change) than an accurate distillation of the more measured committee assessments in the main body<sup>91</sup>. His verdict:

When our climate knowledge system summarizes the already-biased syntheses of already-biased research to become even more biased, it should lose all credibility.<sup>92</sup>

But Epstein isn’t quite as despairing in the quest for meaningful analysis as the above-quoted passage sounds. He maintains that by reading the underlying science assessments in the IPCC reports and “textbooks”, he is able to get a handle on what the “mainstream institutions think — certainly incomparably better sense than the mainstream media institutions or IPCC summaries for policymakers.”<sup>93</sup>

## IX. RISING CO<sub>2</sub> LEVELS: IMPACTS FROM A “PRO-HUMAN” POINT OF VIEW

The book’s culminating series of chapters begins with an extended take on projected carbon impacts from continued burning of fossil fuels, adopting a “full-context, pro-human” framework.<sup>94</sup> In about thirty pages, the reader is provided with the fruits of the author’s examination, which he readily acknowledges must pass through “rigorous standards of assessment” to “overcome anti-impact distortions.”<sup>95</sup> The resulting harvest, he says, picks up on the “least-distorted mainstream and nonmainstream expert sources.”<sup>96</sup> It’s indeed going to be a tall order for any theorized negative impacts to daunt the author; he declares that his inquiry “will focus above all on whether there are any impacts of rising CO<sub>2</sub> levels that could somehow overwhelm our enormous climate mastery abilities to the point of justifying any kind of restriction of the desperately needed value of continuing fossil fuel use.”<sup>97</sup>

For starters, Epstein rejects out-of-hand the notion that emissions could make the Earth “unlivable,” despite the alarms raised by “apocalyptic book titles.”<sup>98</sup> His review of the scientific research on correlations between greenhouse gas emissions and warming temperatures veers away from the popular notion that the planet is heating up to unprecedented levels, chiefly by zooming out to the Earth’s geological history (rather than confining himself to the 150 years or

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<sup>89</sup> The notable dissenters primarily cited are Richard Lindzen, Judith Curry, and Patrick Michaels. Curry, a climate scientist at Georgia Tech before her retirement, parted with some shots (quoted in Epstein’s book) on her frustration at figuring out “how to navigate the CRAZINESS in the field of climate science. Research and other professional activities are professionally rewarded only if they are channeled in certain directions approved by a politicized academic establishment” affecting receiving funding, getting papers published, getting prestigious jobs and committee appointments, etc. *Ibid* at 304.

<sup>90</sup> *Ibid* at 304–06.

<sup>91</sup> *Ibid* at 307–08.

<sup>92</sup> *Ibid*.

<sup>93</sup> *Ibid* at 312.

<sup>94</sup> *Ibid* at 319, ch 9.

<sup>95</sup> *Ibid* at 320.

<sup>96</sup> *Ibid*.

<sup>97</sup> *Ibid*.

<sup>98</sup> *Ibid* at 321.

so that thermometers have been around).<sup>99</sup> His key takeaway is that, in the distant past, temperatures and CO<sub>2</sub> levels were far higher than they are today (or are likely to get), and yet “life on earth thrived”<sup>100</sup>. Other salient points:

- The warming effect is more pronounced in the coldest regions, not so much in the temperate zones<sup>101</sup>;
- As carbon dioxide emissions increase, their warming or “greenhouse” effect is not linear, but rather diminishes; hence, the rate of warming will *decelerate*<sup>102</sup>;
- The long-term geological history of the planet shows “no direct correlation between temperature and CO<sub>2</sub>,” and indeed episodes of increasing emissions have *followed rather than preceded* temperature increases (calling into question that carbon dioxide increases are the main predicate for a warming climate)<sup>103</sup>;
- Sea-level rises have been very slow and small; news stories about more dramatic rises have been cherry-picked to highlight certain locales where the phenomenon is happening for other reasons<sup>104</sup>;
- Epstein reinforces these contentions with various charts. And, in a flourish of sharp rhetoric, he charges that such facts are “criminally” underdiscussed<sup>105</sup>, while noting that we’d have “plenty of time” to “decriminalize” nuclear energy, should the symptoms of planetary warming be greater than he anticipates<sup>106</sup>. His overarching conclusion is that — despite

computer models predicting dramatic increases in warming (and associated side-effects like more severe storms, drought, etc.) — these predictions are unwarranted and in no small part driven by the incentive structure to issue “extreme warming predictions”, the better to reap the rewards of “today’s enormous amounts of climate funding”<sup>107</sup>.

The author ends the chapter with guarded optimism that his insights about the underappreciated benefits and overstated detriments of fossil fuels may relieve humanity from the “pall of the belief that CO<sub>2</sub> emissions are causing climate catastrophe,”<sup>108</sup> so that, *inter alia*, “there is no need for murderous international treaties committing countries to CO<sub>2</sub> reductions; for national, state, and local restriction...preventing poor countries from developing to their full potential; [or] for mass blackouts in California and Texas...”<sup>109</sup>

## X. PARTING SHOTS

Although *Fossil Future* could have closed on that hopeful note, there is more. An extended “policy” coda unrolls a myriad of prescriptions with the common theme of liberating fossil fuels and nuclear energy from the hall of shame to which they’ve been consigned.<sup>110</sup> Epstein: (1) calls upon readers, if inspired by his counter-consensus message, to join the fight against the misconceptions and fallacies he’s outlined and (2) instructs governments on how to loosen up their regulatory policies to permit more efficient and expeditious development of energy and industrial projects. The author also envisions, as an appealing “alternative” resource,

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<sup>99</sup> This is standard practice for books that take on the prevailing consensus that greenhouse gas emissions are damaging the climate; Epstein’s book could have done a better job, however, of explaining the means by which geologists go about estimating temperatures and the presence of CO<sub>2</sub> in long-ago eras.

<sup>100</sup> *Fossil Future*, *supra* note 1 at 323.

<sup>101</sup> *Ibid* at 324.

<sup>102</sup> *Ibid* at 325–29.

<sup>103</sup> *Ibid* at 335.

<sup>104</sup> *Ibid* at 340–44.

<sup>105</sup> *Ibid* at 324.

<sup>106</sup> *Ibid* at 331–32.

<sup>107</sup> *Ibid* at 336.

<sup>108</sup> *Ibid* at 354.

<sup>109</sup> *Ibid*.

<sup>110</sup> *Ibid* at 357. See also *ibid* at ch 10, “Maximizing Flourishing through Energy Freedom”.

nuclear “microreactors” that may be trucked around to remote locations or sent plying the seas to dock and serve coastal localities.<sup>111</sup>

In yet another epilogue-like chapter, “Reframing the Conversation and Arguing to 100,”<sup>112</sup> Epstein empties his barrels at an assortment of perceived nemeses to global, fossil-fuelled progress. Most of these passages echo familiar refrains, inveighing against blinkered governments setting specific “net-zero” milestones<sup>113</sup>; mainstream media outlets purveying “distorted narratives” about purportedly catastrophic consequences from fossil fuels, or their rapid replacement by renewables<sup>114</sup>; educational systems devoted to climate change “indoctrination”<sup>115</sup>; and the corporate world’s embrace of the climate change mantra, coupled with vogueish “ESG” movements<sup>116</sup>. As the title implies, Epstein offers advice on how to reframe the debate, fearing that the anti-fossil fuel legions have had the better of it to date.

## XI. CONCLUSION

So, what to make of Epstein’s *magnum opus*? Polemical tract? Or audacious *tour de force*? Is the author a prolific gadfly dabbling in complex technical issues, or an industrious and useful synthesizer of complex but critical scientific and philosophical issues, willing to stake out unpopular positions and absorb the inevitable incoming? I found myself going back and forth between these polarities. On the one hand, *Fossil Future* is a remarkable compendium of the many arguments launched by climate change activists against society’s dependency on fossil fuels — juxtaposed with generally coherent

refutations of each. On the other hand, it’s dogmatically one-sided<sup>117</sup> and occasionally glib (e.g., in its bland assurance that nuclear energy is the safest of all energies and abhorred by environmental activists because it doesn’t clear their hurdle for low impact on nature).<sup>118</sup> And to say the author’s arguments are “coherent” doesn’t necessarily mean they’ll persuade most readers. Many, though, seem worthy of reflection, and *Fossil Fuel*’s more controversial contentions can be a jumping off point for further exploration.

The book may be best understood as an advocacy piece, endeavoring to put the case for fossil fuels’ continuing vitality in the most flattering light while searching out weaknesses in narratives insisting that their emissions are ruining the habitable environment, and that renewables offer a ready alternative. Few of those who already support eliminating CO<sub>2</sub> emissions as thoroughly and quickly as possible will find much of *Fossil Future* convincing (or, for that matter, readable); but the volume can serve as an in-depth resource for those skeptical of the green movement, and — for the undecided — offers some provocative material for debates the mainstream media has, as Epstein notes, preferred to avoid.

For much of the book, Epstein seems like a Quixotic character tilting with windmills — and solar panels. The few actual climate scientists brave (or foolish) enough to challenge orthodoxy have largely been shamed or silenced. But at the end of the book, the author acknowledges he’s gained a broad platform with his prior book,<sup>119</sup> videos, consultations with political offices, and even talks at “elite

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<sup>111</sup> *Ibid* at 360. While the nuggets of counsel Epstein offers in this chapter are too numerous to summarize, one particularly stood out: a denunciation of the “sustainable development” movement, which the author dismisses as a “self-righteous plague” spreading “anti-impact, anti-development policies in the unempowered world”, *ibid* at 372–73.

<sup>112</sup> *Ibid* at 393, ch 11.

<sup>113</sup> *Ibid* at 394.

<sup>114</sup> *Ibid*.

<sup>115</sup> *Ibid* at 395.

<sup>116</sup> *Ibid* at 395–96.

<sup>117</sup> See Kenneth A. Barry, Book Review of “*The New Map: Energy, Climate, and the Clash of Nations*” by Daniel Yergin, (2020) 41:2 Energy LJ 375, online (pdf): <[www.eba-net.org/wp-content/uploads/2023/02/15-Barry375-382Final.pdf](http://www.eba-net.org/wp-content/uploads/2023/02/15-Barry375-382Final.pdf)>. Contrasting to Epstein’s approach with the more balanced and objective analysis of many current energy-versus-environment issues.

<sup>118</sup> Epstein goes a bit too far in implying that low-carbon alternatives such as nuclear and hydropower are pervasively rejected by the climate change community, although it’s a fair point that a number of prominent environmental organizations disapprove of both technologies.

<sup>119</sup> Alexander J. Epstein, *The Moral Case for Fossil Fuels*, (New York, Portfolio-Penguin, 2014).

institutions” such as major universities.<sup>120</sup> And his trail may be getting a little less lonely. Of late, Europe has started to wobble in its march to rid its energy systems of fossil fuels and its roads of gas-powered vehicles.<sup>121</sup> Moreover, the British Prime Minister announced on July 31 that the North Sea would be opened to more oil and gas drilling.<sup>122</sup> In the U.S., the candidates competing for the 2024 Republican nomination have all attacked the Democrats’ energy transition policy, and newcomer Vivek Ramaswami in particular has echoed strains of *Fossil Future* (to the point of labeling the climate change “agenda” a “hoax”).

Finally, something must be said about the author’s writing style. While it is commendable in its grammatical correctness and general clarity, the reader may be struck by Epstein’s habit of repeating, over and over, points he has already adequately made — like a college professor who frames his lectures with an assumption that the students remember little from previous sessions. This, plus the author’s predilection for single-sentence paragraphs, may make his declarations seem individually more profound but inevitably add to the door-stopper thickness of *Fossil Future*. Epstein legitimately has a lot to say, but a tighter approach to drafting might help reach a wider audience of curious, but time-pressed, consumers. ■

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<sup>120</sup> *Fossil Future*, *supra* note 1 at 400.

<sup>121</sup> See William Booth & Anthony Faiola, “Europe blinks in its commitment to a great green transition”, *The Washington Post* (6 August 2023), online: <[washingtonpost.com/world/2023/08/06/europe-britain-carbon-cost](https://www.washingtonpost.com/world/2023/08/06/europe-britain-carbon-cost/)>. The article notes that “now the bill is coming due, governments are starting to blink at the cost — political and economic — needed to power the great transition away from fossil fuels and toward renewables.”

<sup>122</sup> *Ibid.*