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February 7, 2013

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Erica M. Hamilton, Commission Secretary

Dear Sirs/Mesdames:

Re: FortisBC Inc. Application for a Certificate of Public Convenience and Necessity for the Advanced Metering Infrastructure Project ~ Project No. 3698682

We are counsel for the Commercial Energy Consumers Association of British Columbia (CEC). Attached please find the CEC's Information Requests on the filed evidence of Timothy Schoechle pertaining to the above-noted matter.

A copy of this letter and attached Information Requests has also been forwarded to FortisBC and registered interveners by e-mail.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION

Christopher P. Weafer
CPW/jlb
cc: CEC
cc: FortisBC Inc.
cc: Registered Interveners

Commercial Energy Consumers

Information Request # 1

For Timothy Schoechle, PhD

1. Exhibit 9-8 6C, Schoechle CV

Ph.D. in Communication: School of Journalism and Mass Communication, University of Colorado, Boulder, 2004.

Dissertation topic: "The Privatization of Standardization: Enclosure of Knowledge and Policy in the Age of Digital Information." Conducted dissertation research on current issues in the international standardization system, including research supporting public access and consumer policy.

Master of Science in Telecommunications: Interdisciplinary Telecommunications Program, College of Engineering and Applied Science, University of Colorado, Boulder, 1995.

Thesis topic: "Emerging Consumer Policy Issues on the Information Highway." Conducted research on consumer privacy as impacted by technology and standards.

Certificate: Teacher Training Certificate: Graduate Teacher Program, University of Colorado, Boulder, 2001.

Graduate Coursework in Public Policy: Graduate School of Public Affairs, University of Colorado, Boulder, 1978.

Bachelor of Science in Administrative Science, School of Management, Pepperdine University, Malibu, CA, 1973.

1.1. Please provide a copy of Timothy Schoechle's dissertation 'The Privatization of Standardization: Enclosure of Knowledge and Policy in the Age of Digital Information.

1.2. Please identify the current issues in the international standardization system on which Dr. Schoechle conducted research.

1.2.1. Did Dr. Schoechle conduct primary research on his dissertation topic?

1.3. Please provide the reference list for the research supporting public access and consumer policy.

1.4. Please provide a copy of Timothy Schoechle's thesis "Emerging Consumer Policy Issues on the Information Highway"

2. Exhibit 9-8, 6C, Schoechle CV

Expert Witness—specializing in litigation support regarding patents and standards policies and practices on behalf of various international law firms (details upon request) (2003–present).

2.1. Please provide a complete list of Mr. Schoeche's experience as an Expert Witness including topic and the credentials relied upon.

3. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid, Cover

Why are federal government stimulus programs underwriting billions of dollars of 'dumb' smart meters for utility companies–with taxpayer dollars–meters that will soon be obsolete and not integrate with, or enable, the 'smart grid' of the future on which U.S. energy sustainability depends?

3.1. Please clarify the time frame with which Smart Meters will 'soon be obsolete'.

3.1.1. Please provide an estimated service life of the smart meters to which Dr. Schoechle refers.

3.1.2. Please identify the probability or certainty of Dr. Schoechle expected timing for obsolescence.

4. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid, iv

Dr. Schoechle is an international consultant in computer and communications engineering and in technical standards development. He presently serves as Secretary of ISO/IEC SC25 Working Group 1, the international standards committee for Home Electronic System and is a technical co-editor of several new international standards related to the smart grid. He also serves as Secretariat of ISO/IEC SC32 Data Management and Interchange, and he currently participates in a range of national and international standards bodies related to smart grid technology and policy issues.

4.1. Is Dr. Schoechle a professional engineer? If so, please provide Dr. Schoechle's professional engineering designation and the date at which it was awarded.

4.2. Please describe Dr. Schoechle's role as Secretary of ISO/IEC SC25 Working Group 1

4.2.1. Please provide the mandate for Working Group

4.2.2. Please provide a list of standards developed by the Working Group and any other policies or reports issued over the last 5 years.

4.3. Please describe Dr. Schoechle's role as Secretariat of ISO/IEC SC 32 Data Management and Interchange.

4.3.1. Please provide the mandate of ISO/IEC SC 32 Data Management and Interchange

4.3.2. Please provide a list of the standards developed and any other policies or reports issued over the last 5 years.

4.4. Please provide a list of the national and international standards bodies related to smart grid technology in which Dr. Schoechle participates.

4.5. Please identify the types of 'policy issues' addressed by the national and international standards bodies referenced.

4.5.1. Please identify any non-technical policies related to the Smart Grid in which Dr. Schoechle has been instrumental in developing and the acceptance of those policies on a national or international basis.

4.5.1.1. Please explicitly identify Dr. Schoechle's experience and education related to Canadian and BC energy policy and whether or not he has provided advice to Canadian or BC governments.

4.5.1.1.1. If so, please provide the advice or recommendations given.

5. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid, Foreword

management systems employing demand response. He was also involved in the early development of standards for, and testing of, smart meters including Advanced Metering Infrastructure (AMI). He became a pioneer of such energy management systems—and gateways—with his early cutting edge SMARTHOME 1™ product. His extensive knowledge

5.1. Please explain in detail the role in which Timothy Schoechle was involved in developing standards for smart meters including Advanced Metering Infrastructure.

5.1.1. Please identify the task and year for each standard in which Timothy Schoechle was involved that relates to smart meters and AMI.

5.2. Please explain in detail the role in which Timothy Schoechle was involved in testing smart meters, including Advanced Metering Infrastructure.

5.2.1. Please identify the task and year for each standard in which Timothy Schoechle was involved in testing smart meters.

5.3. Please provide a description of the Smarthome 1 product and its current status in the marketplace.

6. http://smarthomelaboratoriesltd.com/about.html

The Smarthome Laboratories Founder Timothy Schoechle, Ph.D.

Dr. Schoechle is a founder of BI Incorporated, pioneer developer of RFID technology, and former faculty member of the University of Colorado College of Engineering and Applied Science. As an entrepreneur Dr. Schoechle has been engaged in engineering development of electric utility gateways and energy management systems for over 25 years. He presently serves as Secretary of ISO/IEC SC25 Working Group 1, the international standards committee for Home Electronic Systems and he is technical co-editor of several international standards related to the smart grid. He is an expert on the international standards system and serves as secretariat of ISO/IEC SC32 Data Management and Interchange. He holds an M.S. in telecommunications engineering and a Ph.D. in communications policy from the University of Colorado.

6.1. Please confirm that the mini-bio refers to the Timothy Schoechle submitting evidence.
6.2. Please confirm that Smart Home Laboratories Ltd. Is the name of company listed and if Dr. Schoechle has a financial interest in the company.
6.3. Please identify the energy management systems Dr. Schoechle has been engaged in engineering development for.
6.4. Please provide a list of the international standards relating to the Smart Grid for which Timothy Schoechle is technical co-editor.

7. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid, Executive Summary page 2

> Congress, state and local governments, as well as ratepayers, have been misled about the potential energy and cost saving benefits of the new "smart" meters, paid for in large part with taxpayer dollars, as well as ratepayer dollars. This report makes the case that the smart meters have become confused and conflated with the much broader concept of the smart grid, and that the undue emphasis on meters diverts resources badly needed to develop and bring forward the key elements of a true smart grid technology that can integrate distributed renewable energy.

7.1. Please provide Timothy Schoechle's credentials with respect to assessing energy and cost savings from Smart meters including that relating to theft, meter reading savings and Measurement requirements.
7.2. Please provide Timothy's Schoechle's credentials with respect to business case analysis.
7.3. Please provide any report written, researched or referenced by Timothy Schoechle identifying the situations in which Congress, state, local governments and ratepayers have been misled regarding the energy and cost saving benefits of smart meters and identify the amounts by which they were misled.
7.4. Please provide Timothy's Schoechle's credentials with respect to assessing information provided to Canadian Parliament, provinces and local governments and provide any reports documenting this assessment.
7.5. Does Timothy Schoechle believe that the BC provincial government and ratepayers have been misled about the potential energy and cost saving benefits of the FortisBC AMI application?
    7.5.1. If so, please explain the ways in which the BC government and ratepayers have been misled about the potential energy and cost saving benefit with respect to the FortisBC AMI application.
    7.5.2. Please provide Timothy Schoechle's credentials with respect to conducting cost/benefit studies.
        7.5.2.1. Please provide revised cost and saving estimates and explain the manner in which they have been derived and the forecasts used.

7.6. Does Timothy Schoechle believe the the FortisBC AMI program diverts resources that should be used elsewhere?

7.6.1. If so, please identify the resources, and from where they are being diverted.

7.7. Please clarify how the 'key elements of a true smart grid' will not be met by the FortisBC AMI program.

8. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Executive Summary page 2 and Report page 37

> Regulators tend inevitably to be "captured" by the utility interests they regulate. In a deregulated and renewable-powered world, utilities must become service companies—maintaining wires and poles—no longer producers or asset builders. Every electricity user could also be a producer.
>
> It is well established that regulators are susceptible to chronic "regulatory capture" by those that they regulate (Peltzman, 1976), and that public officials have a tendency to serve their own interests rather than those of the public (known as "public choice" theory). Regulatory capture and public choice theory are well-developed topics in policy research.[54] The NSTC Report's reliance on regulatory policy and regulatory initiatives fails to recognize the limits on what they can accomplish in transforming institutional models and the electricity system.

8.1. Please provide information as to Timothy Schoechle's educational background in law and quasi-judicial processes such as utility regulation.

8.2. Please provide a précis of Timothy Schoechle's experience in utility regulation specifying in each circumstance in which he has acted as or for a utility regulator, applicant or intervenor.

8.3. Please provide a list of all reports directly related to utility regulation authored by Timothy Schoechle.

8.4. Please provide clarification as to the meaning of the word 'captured' in the context used.

8.5. Please explain the manner in which regulators have been 'captured' by the utility interests they regulate, and why this is inevitable.

8.5.1. Does Timothy Schoechle believe that the BCUC has been 'captured' by FortisBC in any manner?

8.5.2. If so, please explain the manner in which the BCUC has been captured by FortisBC.

8.5.3. Please provide any reports Timothy Schoechle has written documenting explicit 'captured' behaviours.

9. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Executive Summary page 2

Conventional utility business model

The 100 year-old monopoly utility business model contains inherent conflicts and is de-incentivized from taking the necessary steps toward renewable energy and sustainability. Regulated utilities sell electricity as a commodity at profitable regulated rates and, more importantly, can charge back their capital assets to ratepayers at a guaranteed 10-13% annual rate of return. Thus they have no incentive to sell less electricity, yet a strong incentive to build excessive and inappropriate infrastructure (e.g., generation, transmission, meter networks, etc.).

Renewables vs. baseload

Coal plants must run at near capacity to achieve necessary economies of scale, known as "baseload" generation. Adding wind or solar to the power mix may in fact be cost-additive for utilities and ratepayers, because the renewables, if overproducing on top of the baseload, are "curtailed" or wasted (i.e., must turn off the wind to burn more coal). Thus, there is an inherent conflict between baseload generation, the dominant means of electricity generation in the United States, and a transition to renewable energy. Baseload dependency must be decreased or entirely eliminated.

9.1. Please provide information as to Timothy Schoechle's educational background and experience in macroeconomics and identify any titles and designations held in this field.

9.2. Please provide any studies Timothy Schoechle has conducted with respect to utility business models.

10. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 8

Another method of dealing with variation in supply is known as demand-side management or "demand response" (DR). Demand response includes various techniques to manage demand to better match supply. DR offers ways to quickly shift peak demand by sending control signals that turn off or limit specific industrial or residential load devices (e.g., air conditioners, water heaters, etc.). However DR systems require communication pathways and special premises equipment in order to be implemented—products and services that are not yet standardized, fully developed, or readily available.[14] Unfortunately, DR employed in a baseload system, while shaving peaks and improving system efficiency, may perversely serve to increase dependency on relatively dirtier baseload sources (e.g., coal, nuclear, etc.) and thus can actually result in higher pollution and CO_2 emissions.[15] However, properly implemented, new forms of DR (e.g., "transactive energy") can play a crucial role in renewable integration if the resulting system is cheap, ubiquitous, and easy to use.

10.1. Please identify the communication pathways and special premises equipment that are required for DR systems that are not yet standardized, fully developed or readily available.

10.1.1. Please confirm if this equipment is currently under development and/or undergoing standardization.

10.2. Please provide Timothy Schoechle's credentials in assessing the level of pollutants and CO2 emissions derived from different energy sources.

10.3. Please provide Timothy Shoechle's credentials in determining the overall benefit from improving system efficiencies in the baseload.

10.4. Please explain the term 'transactive energy' and identify all the the "new forms" of DR being referenced.

10.5. Please explain the term 'cheap' in the context of the proposed system especially in relation to the cost of energy being provided.

10.6. Please provide Timothy Schoechle's experience and work history in utility resource planning and renewable resource integration.

11. http://smarthomelaboratoriesltd.com/about.html

The Company's product—HomeGate™—consists of microprocessor embedded firmware and chips used to implement interoperability gateways for homes and buildings. The firmware and chips will allow proprietary and open system software and devices to communicate within a home or business facility and with the grid in a way that is not possible today. A proliferation of home network and external access network standards and technologies have created a lack of interoperability between products in homes and small buildings as well as between them and the grid. The HomeGate™ gateway and interoperability standards are designed to solve this problem.

According to GWAC, NIST, and the DoE, the lack of true product and system interoperability presents the single most costly challenge to the creation of the smart grid.

The Company's HomeGate firmware is focused specifically on connecting consumers and business users to the smart grid and to energy management demand response (DR) applications, and particularly to advanced DR applications. Such advanced DR applications include 1) Transactive control strategies for DR, 2) on-premises autonomous DR load control methods, 3) on-premises control and coordination of smart (and not-so-smart) appliances, management of solar PV and wind turbine generation, battery storage, and plug-in electric car recharge and discharge.

11.1. Please explain what the HomeGate gateway is.

11.2. Please explain what "Transactive control strategies for DR" are.

11.3. Please explain what "on-premises autonomous DR load control methods" are.

11.4. Please provide a complete list of the company's firmware offerings.

11.5. Please explain if the products and services are currently on the market.

11.6. Please provide a price or estimated price of any product or service currently on the market or in late stage development.

12. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 9

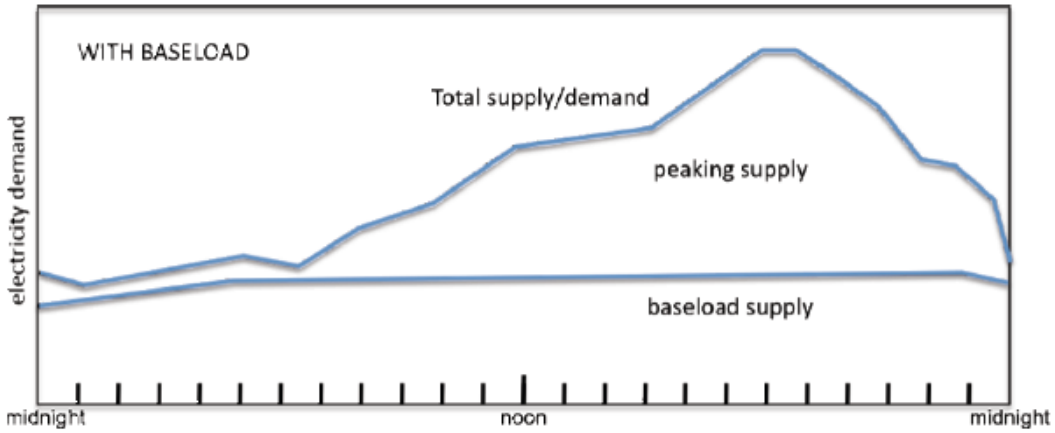

Figure 1a—Conventional baseload electricity supply system

But baseload is not essential for meeting demand. In Figure 1b the same total supply/demand profile is met by a combination of renewable (variable) supply and peaking supply. This figure is oversimplified to merely show how variable renewable generation might replace baseload generation and still match the same total supply/demand profile.

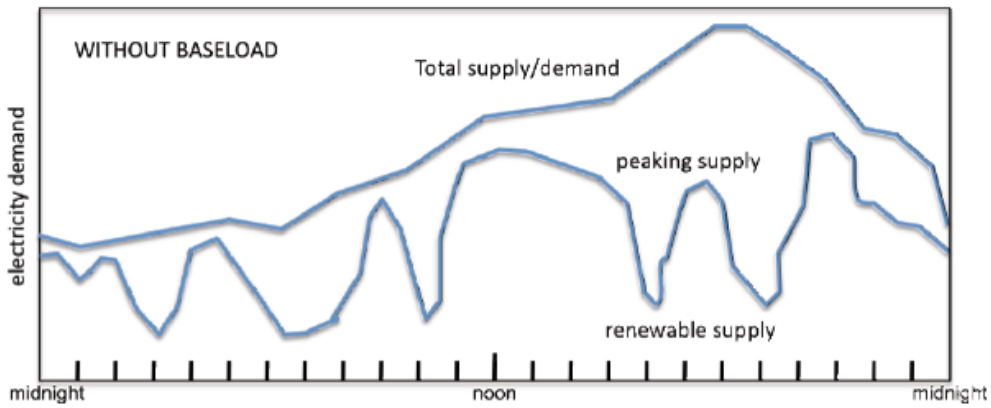

Figure 1b—Renewable non-baseload electricity supply system

In the baseload system (figure 1a), the unpredictable nature of some renewable sources (e.g., wind and solar) will sometimes overload the system with too much power when added on top of the fixed baseload. This means that power may be wasted (or "curtailed"). The renewable non-baseload supply system depicted in Figure 1b does not waste power but does, however, present significant technical challenges requiring careful and rapid rebalancing by quick response to changes in supply and demand—either by quickly adding fast peaking sources (e.g., hydro, storage sources, natural gas turbines) when needed or by quickly reducing or shifting demand

12.1. Please document the significant technical challenges that would accrue with a renewable non-baseload electricity supply system.

12.1.1. Please explain how Figure 1b would not waste power in the event that supply exceeded demand.

12.2. Please identify who would be responsible for providing fast peaking sources such as hydro, storage sources, natural gas turbines in the proposed model and the manner in which they would be compensated and the capabilities of the equipment to actually perform these functions.

12.3. Please estimate the capacity that would be required to ensure adequate supply on an annual basis from fast peaking sources such as hydro, storage sources, natural gas turbines.

12.4. Are there areas in the world in which this model has been successfully conducted?

12.4.1. If so, please provide documentation as to the number of years in which it has been employed and the literature which Dr. Schoechle has reviewed on the subject.

13. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 11

The smart grid may yet be an important key to a new energy economy, but the current smart meter approach is irresponsible—financially, politically, and technologically. This is because the smart meter emphasis does not contribute to the balancing of supply and demand or to the integration of renewable sources, while sapping the resources needed for true progress and squandering public support. Over the last year, utilities around the country have installed an

13.1. Please provide Timothy Schoechle's credentials with respect to financial analysis.

13.2. Please provide Timothy Schoechle's credentials with respect to the balancing of energy supply and demand on the electric system.

14. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 12

In 2010, The *Smart Grid Investment Grant Program*, part of the *American Reinvestment and Recovery Act,* provided matching funds to utility projects. In rolling out the money, President Obama spoke about how the program would "…spur the nation's transition to a smarter, stronger, more efficient and reliable electric system" that would "promote energy-saving choices for consumers, increase efficiency, and foster the growth of renewable energy sources like wind and solar" (Obama, 2009). The main elements of the program are identified in the quote below:

> **Empowering Consumers to Save Energy and Cut Utility Bills — $1 billion.** These investments will create the infrastructure and expand access to smart meters and customer systems so that consumers will be able to access dynamic pricing information and have the ability to save money by programming smart appliances and equipment to run when rates are lowest…
>
> **Integrating and Crosscutting Across Different "Smart" Components of a Smart Grid — $2** billion…funding a range of projects…including smart meters, smart thermostats and appliances, syncrophasors, automated substations, plug in hybrid electric vehicles, renewable energy sources, etc. (Obama, 2009).

Thus was the intention. Over the ensuing two years, a number of valuable smart grid research and demonstration projects were initiated and useful transmission and distribution automation improvements were implemented with a portion of the federal money. These actions worked to the benefit of utilities and their customers—mainly by bringing about increased reliability and efficiency through improvements in distribution, transmission and generation (EnerNex, 2010).[24] However, the unfortunate reality is that very little progress has been made toward moving the grid toward distributed renewable energy or enabling the other goals proclaimed in the program goals cited above. Disproportionate benefit from the funding has accrued to utilities and meter and metering network manufacturers (e.g., Elster, GE, Itron, Landis+Gyr, Oncor, Sensus, Silver Spring Networks, etc.) rather than to consumers. The meters have killed local jobs while the promise of smart thermostats, smart appliances, usage displays, and renewable energy source integration continues to languish.

14.1. Please provide Timothy Schoechle's credentials with respect to evaluating the economic impact of the Smart Grid Investment Program.

14.1.1. Please identify any research conducted and provide any papers authored by Timothy Schoechle with respect to the analyzing the benefits accruing to metering and metering network manufacturers including Elster, GE, Itron, Landi+Gyr, Oncor, Sensus, Silver Spring Networks.

15. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 13 and page 40

> One of the supposed benefits of smart meters is the enabling of time-based rates. In reality, smart meters and dedicated smart meter networks are not necessary for this purpose—there are better technical approaches.[27] Moreover, time based variable rates are not effective or equitable without automated customer in-home or on-premises equipment to respond to them and manage usage (and perhaps on-premises generation or storage) accordingly. Additionally, time-based rates must take into account the situation of lower-income users who may not be able to purchase expensive automated energy-management equipment. Without proper implementation, time-based rates risk being seen as nothing but subterfuge for rate increases, further souring the public on the smart grid.
>
> *Key 3—Advanced supply/demand response/transactional energy*
>
> Advanced supply/demand response, or transactional energy, refers to smart grid technology that uses locally available communication media and protocols (e.g., Internet access via cable, DSL, fiber optic, wireless, etc.) to facilitate real-time coordination of supply and demand among grid users (including utilities, independent producers, electricity customers, electric vehicles, homes, and other buildings). Such protocols are in development (Cazalet, 2011) and can be applied to facilitate "transactive control strategies" (including variable pricing, time-based pricing, etc.).[59] This communication would employ household or building information gateway devices connected to premises-based energy management systems (EMS) and power conditioning

15.1. Please explain why the FortisBC AMI system is not necessary to enable time-based rates.

15.2. Please confirm that 'better technical approaches' refers to premises gateways, energy management systems and transactive control strategies.

15.2.1. If so, please confirm if these are the same or similar products as those offered by SmartHome Inc.

15.3. Please provide a fulsome analysis of the superiority of the technical approach referenced in contrast to the FortisBC AMI project including a cost comparison.

16. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 17

> What is almost always assumed or alluded to by meter advocates, but never explained, is how reading meters, however frequently, can serve the goals of functions of the smart grid—i.e., balancing supply and demand. Never explained is how granular personal meter data helps manage the grid. It is believed by some that consumer electricity usage behavior data may be useful to utilities or to consumers. But it is not clear how such data would actually be applied, nor is it clear that there are not cheaper and more benign ways to acquire it. SCADA[35] networks already provide utilities with the aggregate transformer or substation load data needed to assess distribution loads and conditions. A premises meter is not needed, or would be impractically cumbersome to use, to aggregate data to derive distribution grid load information. The notion that a utility supercomputer could somehow centrally micromanage a vast network of individual household appliances is fantastical—the stuff of science fiction scenarios.

16.1. Please provide Timothy Schoechle's credentials with respect to load management .

16.2. Please identify all employment experience Timothy Schoechle has at an energy utility.

17. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 23

> In summary, granular meter data reveal intimate details about consumers' personal lives while providing little or no value with respect to achievement of the potential benefits of a smart grid. The existence of such data constitutes a significant threat to personal privacy, perpetuates extraneous and tangential technical development, diverts resources, stimulates consumer pushback against the smart grid, and builds a constituency for unnecessary and potentially harmful and/or redundant metering networks and for the development of applications that may be detrimental to consumer and societal interests.

17.1. Please provide Timothy Schoechle's credentials with respect to privacy laws and information management.

18. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 24 and page 26

> It is obvious from decades of research on a wide range of frequencies within the radiofrequency (RF) spectrum that EMFs have biological effects, and associated health effects are likely. But the nature and extent of such effects (including cumulative effects) and any associated risk is not clear. Such effects have not been well researched for all frequencies and power densities,

> In summary, the CCST Report offers a highly problematic basis for steering public policy for a number of reasons. In any case, it seems clear that more study is needed on the effects of wireless smart meters if they are to be installed in peoples' homes on a large scale. An array of scientific opinions have been advanced and no general consensus has emerged on the question of whether significant EMF health risk exists from exposure to smart meters. Following are some examples of positions on both sides of the question, starting with some that accept EMF risks as being plausible or likely.

18.1. Please provide Timothy Schoechle's credentials with respect to health research.

18.1.1. Please provide any research conducted by or reports written by Timothy Schoechle with respect to the biological effects of EMFs.

18.2. Please provide Timothy Schoechle's credentials with respect to meta analysis, particularly with respect to health studies.

18.2.1. Please provide any research conducted by or reports written by Timothy Schoechle with respect to meta analysis of health issues and electromagnetic frequencies.

19. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 31

The statement above implies that the energy solution is based on use of the smart grid to shave peak electric energy usage by shifting loads thus increasing baseload dependency—exactly the wrong approach! Rather, the answer is precisely the opposite—that "stand-by" power plants need to be engaged, along with renewable energy sources and smart grid technology, to completely eliminate baseload generation. The administration policy approach would not "reduce energy bills," but rather would *increase* them[53] as well as increase CO^2 emissions and other pollution. This is because it is precisely baseload generation that is "the most expensive power generation there is," if one considers the consequences and the totality of subsidies and externalized costs.

19.1. Please provide an estimated cost of the 'stand-by' power plants and the cost of energy that would be produced.

19.2. Please provide Timothy Schoechle's credentials with respect to analyzing the cost of energy.

19.2.1. Please provide any research conducted by or reports authored by Timothy Schoechle regarding the cost of various sources of energy.

19.3. Please provide Timothy Schoechle's credentials with respect to analyzing net CO2 and other greenhouse gas emissions from different energy sources.

19.4. Please provide any research conducted by or reports authored by Timothy Schoechle regarding CO2 and greenhouse gas emissions.

20. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 31

In June, the National Science and Technology Council (NSTC) of the Executive office of the President issued a white paper entitled *Policy Framework for the 21st Century Grid: Enabling Our Secure Energy Future* (NSTC, 2011). This report represents the latest high-level policy statement on electricity from the Obama administration. It was developed by a committee of the NSTC based on input derived from ten executive agencies, six offices within the White House, and three independent agencies. The report drew as well from a range of corporations, the utility industry, a public blog, two DoE requests for information (RFIs), and responses from a selection of stakeholders to outreach efforts.

20.1. Please provide a copy of the paper "Policy Framework for the 21st Century Grid: Enabling Our Secure Energy Future (NSTC, 2011) and file with the BCUC.

21. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 34

Report relies on unclear grand transformative language

The NSTC Report uses grandiose visionary language to invoke the "promise a smarter grid" in terms that have become commonplace but remain ill-defined. See for example the celebratory promises in *Xcel Energy Smart Grid: A White Paper* (Xcel, 2008). This sort of visionary rhetoric has been in use long enough to evoke broad skepticism among informed readers and listeners and accordingly should be toned down or used with great caution in official policy statements.

21.1. Please provide a copy of the Xcel Energy Smart Grid: A White Paper and file with the BCUC.

21.2. Please provide specific examples of the language to which Timothy Schoechle objects.

21.3. Does Timothy Schoechle believe that grandiose visionary language diminishes the value of the information contained in the report?

21.4. Does Timothy Schoechle believe that inflammatory language should be toned down or used with great caution in policy papers?

22. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid Page 34 and 35 and 40

> Some aspects of federal policy reinforced by the report may impede—and may have already impeded—the development of a genuine smart grid that could serve national energy goals. Federal policy has created problems by introducing tangential factors such as too much stimulus money chasing too few actual installable smart grid products, causing an inordinate emphasis on smart meters and their dubious benefits, instead of doing the research needed for a real smart grid. This has resulted in public pushback to the detriment of DER and the true thrust of the smart grid vision. It would seem that any frank and honest federal policy assessment should face this issue and propose solutions.
>
> NSTC Report fails to provide discussion of the effects of fuel price trend curves on business models and market choices (e.g., increasing costs of carbon & nuclear vs. declining costs of solar, wind, and other renewables) or of the effects of diseconomies of scale between technologies (e.g., solar & wind lack conventional economies of scale and thus are unappealing to capital-intensive utility rate recovery and to centralized management strategies).
>
> electronics. Electricity from PV is now at or near cost parity with coal, especially when externalized costs and subsidies are taken into account (Farrell, 2011; Lovins, 2011). Windmills (especially small scale) also enjoy substantial economies of mass production (like appliance manufacturing) and produce power at nearly the same efficiency, regardless of scale.[55] For wind and solar, the fuel is free and unlimited.

22.1. Please provide documentation of Timothy's Schoechle's credentials and experience analyzing federal energy policy.

22.2. Please provide documentation of Timothy Schoechle's credentials and experience analyzing fuel price trends.

22.2.1. Please provide Timothy's Schoechle's forecast of the following fuel prices: oil, natural gas, solar, wind and provide the reference material from which it was derived.

22.2.2. Please provide a description and quantification of government subsidies for each of the energy sources including natural gas, wind and solar.

23. Exhibit 9-8 6B Schoechle Report, Getting Smarter About the Smart Grid page 42

Immediate action recommendations

- Stop deploying smart meters and dedicated smart meter networks. Conventional metering is adequate and existing Internet broadband networking (e.g., DSL, cable, fiber, etc.) will be satisfactory for future remote meter-reading and smart grid applications (cutting jobs should not be a priority).

23.1. Please identify the 'conventional metering' to which Dr. Schoechle refers.

23.2. Please identify the 'smart grid applications' for which conventional metering is adequate.

24. Exhibit 9-8, 6C Schoechle CV page 1

Secretary, SC32—international standards committee for *Data Management and Interchange*—of the Joint Technical Committee 1 (JTC1) for *Information Technology* of ISO (International Organization for Standardization) and IEC (International Electrotechnical Commission), Geneva, Switzerland; for Farance Inc., SC32 Secretariat on behalf of ANSI (American National Standards Institute), New York, NY, (2006-present).

Manage, organize, and coordinate all technical work, international meetings, and the flow of technical and administrative documents, including issuance of international ballots, standards, and technical reports, on behalf of the United States as Secretariat for Subcommittee 32—*Data Management and Interchange*.

Director, ICSR (International Center for Standards Research), University of Colorado, Boulder, CO (2000-2004).

Conducted academic research, organized conferences, and supported research papers on international standards and standardization practice.

Graduate Faculty Adjunct, Interdisciplinary Telecommunications Program, College of Engineering and Applied Science, University of Colorado, Boulder, CO (1997-2004).

Developed and taught graduate level courses (*i.e.* Telecom Standards, Future of Telecom, Management and Information Technology). Managed, conducted, and lectured at weekly interdisciplinary seminars. Sat on graduate thesis committees, advised students, and conducted special academic events.

24.1. Please describe the state of Wi-Fi services at the University of Colorado and whether or not they are expanding or being eliminated.

24.2. Please provide the same information for other locations in which Timothy Schoechle regularly works.

24.3. Please provide copies of any presentations Timothy Schoechle has made to the University regarding RF radiation on the campus.

24.4. Please indicate whether or not the offices in Timothy Schoechle's department have any wireless equipment installed in them.

24.5. Please indicate whether or not Timothy Schoechle utilizes wireless internet and whether or not his colleagues in the department utilize wireless internet.

24.6. Please indicate whether or not Timothy Schoechle has knowledge of any RF studies regarding the campus at the University of Colorado and please provide copies of any such studies if they exist.

24.7. Please provide a description of an activity Timothy Schoechle has participated in with respect to RF policy at the University and or the State level