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November 15, 2004

To: Catherine P. Awakuni, Commission Counsel
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From: Carl Freedman

Re: Act 95 Workshops – Comments on Initial Concepts Paper

The comments below respond to the invitation for comments in the Commission's letter regarding the Act 95 Workshops dated November 1, 2004 and the accompanying document "Electric Utility Rate Design in Hawaii: An Initial Concept Paper" dated November 1, 2004 (Concept Paper).

These comments are my own. I do not represent any client in this matter.

Due to time constraints, these comments are incomplete.

These comments represent a first impression. They are offered for the sake of promoting meaningful discussion. I look forward to some good dialogue at the November workshop that could, perhaps, change my perspective on any of these matters.

GENERAL COMMENTS

(1) THE OBJECTIVES OF THE RATE MAKING STRUCTURE SHOULD BE CLARIFIED EARLY IN THE PROCESS.

Several published papers relating mainland experience with rate design and PBR regimes have stressed the importance of clearly determining the objectives to be attained by the rate structure at the beginning of the process. First objectives are determined. Then mechanisms are designed to attain the objectives. Then the numbers are determined to implement the mechanisms. This is sound advice.

One obvious determination is whether the objectives of the rate making structure are to focus primarily or exclusively on the purposes of Act 95 (providing incentives to implement renewable and efficiency resources to meet the renewable portfolio standards). If this is the case a new rate making structure might be a specific mechanism rather than an overhaul of the whole existing cost-base ratemaking structure.

In any case, in addition to any other objectives that may be determined, the following distinctions regarding the purposes identified in Act 95 should be clear:

- To what extent is the intended ratemaking structure a means to encourage renewable or efficiency resources generally?
- To what extent is the intended ratemaking structure a means to reward attainment of specific portfolio standards?
- To what extent is the intended ratemaking structure a means to enforce the attainment of specific portfolio standards?

These represent distinctly different objectives for a rate making structure. All seem consistent with the letter and purpose of Act 95.

(2) CLARIFICATION OF THE SCOPE OF DISCUSSION AT THE WORKSHOP WOULD BE PRODUCTIVE.

The Concept Paper states that the goal of the first workshop is to describe and gather comments on the Commission's methodology as a whole. It would be helpful in guiding the discussion at the first workshop to hear from the Commission what matters regarding the methodology are already decided and which are ripe for discussion.

Does the Commission want comments regarding how it should proceed with its methodology or is it asking for inputs to the methodology? Has the simulation analysis already been specified or is discussion of the design of the simulations productive?

Are the merits of Act 95 and possible amendments ripe for discussion?

Has the Commission decided how it intends to implement renewable portfolio standards or is this to be determined along with consideration of the rate making structure? Or is the question of how the portfolio standards are to be implemented ripe for discussion at all?

Some clarification of the objectives of the workshop and the scope of useful discussion would be productive.

PARAGRAPH 21: RENEWABLE PORTFOLIO STANDARDS IN HAWAII

(3) ACT 95 POSES SOME DIFFICULT CHALLENGES THAT MUST BE RESOLVED.

Act 95 is certainly not one of those rare, well-crafted statutes that proceeds sensibly from a concisely stated purpose to effective implementation by means of well laid out and carefully crafted provisions. Nor is it a statute that merely requires straightforward interpretation and clarification prior to implementation. Act 95, as it turns out, is downright challenging.

The legislation that provided for Act 95 was conceived originally as a conventional RPS bill that would ***require*** twenty percent penetration of renewable energy ***generation*** by the year 2020. By the time legislation was passed the RPS provisions were essentially disarmed and substantially diluted. In fact, much of the language of Act 95 is devoted to disarming any

mandate (limiting measures to those at or below avoided cost), reducing existing supports (removing minimum and floor avoided cost supports), and mitigating any deleterious impacts on utility profits (providing rate structure incentives ensured to maintain utility profit margins).

The nice sounding perfection of the "20 percent by 2020" milestone was preserved in the final legislation, but only by diluting the standards by expanding the definition "renewable energy" to include electric energy savings from all quantifiable energy conservation measures, district cooling systems and fossil fueled cogeneration thermal energy use. Studies are commissioned to review the RPS milestones for reasonableness so that standards can be adjusted if they cannot be achieved at or below avoided cost. All of these conditional provisions seem to complicate instead of promote the lofty stated purposes of the statute.

In its final form the RPS provisions of Act 95 are not mandatory unless assertively administered as such by the Commission. Implementing effective mandatory standards would require (1) putting some teeth into some consequences for failing to attain the standards and (2) implementing a deliberate and explicit approach to establishing avoided costs that provide for the costs of renewable generation technologies. The matter of addressing avoided costs is addressed in comment (5) below.

It is also not clear whether the twenty percent milestone is an easy objective or whether it is unreasonably difficult. This depends in part on how the Commission interprets and defines the scope of some of the components listed in the definition of "renewable energy." For example, if the scope of the definition of "quantifiable conservation measures" is interpreted literally and very broadly to thoroughly include the historical impacts of energy codes and federal appliance efficiency standards for motors, air conditioners, water heaters, refrigerators, etc., it may be that the 2020 milestone has already been attained.[1]

The point here is not that the twenty percent milestone is too high or too low or that the list of components in the definition of "renewable energy" is too broad. The point is simply that Act 95 poses several difficult challenges that need to be resolved in order for the statute to be effectively implemented. These include broad questions as well as specific questions.

- Will the provisions of Act 95 be implemented as mandatory renewable portfolio standards?
- How will avoided costs be established to enable attainment of the objectives of Act 95?
- How will the list of resources under the definition of "renewable energy" be clarified to allow concise application of the renewable portfolio standards?

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[1] This conjecture is offered as a hyperbole. It is not based on any calculation. Depending upon the degree of rigor and the bounds of application, however, it may very well be true.

In addition to their relevance to the implementation of RPS, these questions bear directly on the objectives and mechanism of any rate structure implemented under the statute.

- Is one of the objectives of the rate making structure to enforce the RPS?
- In devising a rate making structure to provide incentives to attain the renewable portfolio standards it certainly matters whether the standards are a real challenge and will reach some effective end, or whether they are limited to nothing more than rewarding the existing status quo (by including only those resources at or below avoided cost).
- Some details regarding the RPS need to be addressed in order to consider the rate making structure. In order to calculate the attainment of the portfolio standards or perform the simulations planned by the Commission it is essential to have definitions that clearly identify of the scope of the components within the definition of "renewable energy."

This is all to say simply that there are some difficult questions to address. To the extent possible, these should be addressed at the beginning of the process in the realm of policy determinations rather than at the end of the process or after the rulemaking process in the context of contested case proceedings. These questions could perhaps be addressed prior to performing the simulations. Some can perhaps be informed by the results of the simulations. In any case the broader questions pertaining to how the RPS will be implemented should be certainly be resolved prior to determining whether a rate structure should be adopted or what particular rate structure should be adopted.

(4) IS ACT 95 NECESSARILY A MANDATORY RPS INSTRUMENT?

It seems essential from the outset of the process to have a clear understanding of the specific role and objectives of the intended utility ratemaking structure. It is clear enough that one objective is to devise a ratemaking structure to "encourage" utilities to attain the renewable portfolio standards. Is it also an objective to "enforce" the attainment of the renewable portfolio standards? Is Act 95 going to be implemented merely as an incentive structure or also as a mandate to attain the portfolio standards? Has the Commission already made this determination or is this a question to be discussed in the workshops and be evaluated in the simulation analyses?

There are various types of instruments to encourage the implementation of renewable energy and efficiency resources. These can be categorized into four broad classifications: financial incentive, financial penalty, mandate and direct financing instruments.[2]

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[2] A list and discussion of instruments sorted into these classifications is provided in the report *Hawaii Energy Utility Regulation and Taxation: Practice, Policy and Incentives for Energy Efficiency, Renewable and Distributed Energy Resources*, July 2003, by Carl Freedman and Jim Lazar, for the University of Hawaii, Hawaii Energy Policy Forum, pp.132-135.

Financial incentive and penalty instruments are designed to provide differential advantage to renewable energy or efficiency resources by encouraging these resources or by penalizing conventional resources. Typical instruments include tax credits, special purpose revenue bonds, revolving loan programs, emission fees, hookup fees, taxation instruments, and *utility rate designs and mechanisms*.

Mandate instruments are mechanisms to require some level of implementation of renewable energy or efficiency resources. Typical mandate instruments include energy codes, appliance efficiency standards, integrated resource planning, renewable set asides, and *renewable portfolio standards*.

Renewable portfolio standards are usually understood by common definition to be mandate instruments. For example, in lists of states with renewable portfolio standards, those states in which the standards are only goals and are not mandates are explicitly noted as exceptions. Prior to Act 95, Hawaii was listed with this particular "asterisk." Despite this conventional understanding, however, I know of no formal authority or definition that would decisively resolve whether a "renewable portfolio standard" is necessarily mandatory.

Act 96 specifies that each electric utility "shall establish a renewable portfolio standard" of specified percentages of electric energy sales by future dates. The term "portfolio standard" is not defined within the statute. Nowhere in the statute does it require a utility to attain its portfolio standard. Unless the term "portfolio standard" is accepted by some common definition to necessarily be a mandatory provision, Act 95 does not, within its own text, purport to be a mandate instrument.

Regardless of this distinction, the statute falls short of being an effective mandate within the scope of its own language for several reasons. First, the statute does not have any provisions that require the electric utilities to meet the portfolio standards they must establish.[3] Second, there are no penalties or consequences identified for failing to meet the specified portfolio standards. Third, the portfolio standards are clearly limited to apply only where renewable energy resources can be implemented "at or below avoided costs". This provision essentially limits the effect of the statute to nothing more "mandatory" than the preexisting status quo represented by federal and state codifications of PURPA and the Commission's Framework for Integrated Resource Planning (IRP). As noted below, the Commission *could* implement Act 95 as a mandatory instrument. Act 95 on its own, however, does not appear to be a mandate.

Despite the assertions above, however, Act 95 is widely perceived as a mandatory instrument. The formal Description header of S.B. NO. 2474 S.D.3 H.D.2 begins: "*Requires electric utilities to meet a renewable portfolio standard of 15 percent for 2015 and a goal of 20 percent for 2020.*" Although this mandatory language is not in the text of the statute it

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[3] The only language in Act 95 that implies that utilities might be required to meet the portfolio standards is stated in the negative where under specified conditions "the electric utility company shall be relieved of responsibility for meeting the renewable portfolio standard for the period of time that it is unable to meet the standard."

characterizes the perception of the bill during in its discussion at the legislature and in the laudatory press releases by the administration and legislators that followed the bill's passage.

Whether Act 95 is a mandatory RPS instrument is not addressed explicitly in the Concept Paper. The presumption is implied, but not with any apparent intent to state a resolute position on the matter. For example, the Concept Paper states that "Under the RPS regime of Hawaii, the share of renewable energy resources is legislatively required to increase from 6.6% in 2002 to 10% in 2010, 15% in 2015, and 20% in 2020"[4] but in context does not appear to be addressing the question of mandate.

The simulations described in the Concept Paper state that the portfolio standards are "pre-determined and taken as a given" and are to be treated as exogenous variables in the models.[5] This effectively presumes that the portfolio standards will be attained, but it does not directly address whether the standards are mandatory.[6]

In any case, there appears to be uncertainty regarding whether the RPS provisions of Act 95 are necessarily mandatory. This would seem to be an important matter to clearly resolve in devising a rate structure to implement the purposes of the Act.

(5) THE COMMISSION COULD IMPLEMENT EFFECTIVE MANDATORY RPS.

It is clear that the Commission ***could*** implement the provisions of Act 95 as effective mandatory renewable portfolio standards. To do so, however, the Commission would have to take several deliberate actions. The Commission would have to (1) require that the utilities attain the standards (2) include some provisions, in its ratemaking structure or otherwise, that give some teeth to this requirement and (3) provide for the establishment of "avoided costs" that reflect the costs of implementing renewable resources rather than limiting avoided costs to the costs of conventional "least dollar cost" resources as currently applied.

The establishment of comporting avoided costs could be implemented in several ways, either with or without any competitive bidding process that could result from Docket No. 03-0372. For example, the Commission could specify that (1) the utility must develop or contract for the specific types of resources identified in its approved IRP and that (2) the renewable resources included in the approved IRP could not be avoided by conventional resources (without amendment of the IRP). In this case then, the "costs avoided by the utility" for implementing renewable resources would reflect the costs of the renewable resources in the utility IRP. With this or some equivalent provision and if the utility IRP

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[4] Concept Paper, paragraph 18, p.8

[5] Concept Paper, paragraphs 30, 41 and 47

[6] One question I hope to resolve at the workshop is how this presumption serves the purposes of the simulation analyses. If attainment of the RPS is presumed categorically in the simulations, how is the effectiveness of various candidate rate structure incentive mechanisms at getting to this result going to be evaluated?

includes the sufficient renewable resources to attain the renewable portfolio standard, the Act 95 definition of "cost-effective" as "at or below avoided costs" should not prevent effective attainment of the portfolio standards.

PARAGRAPH 29: PERFORMANCE BASED RATEMAKING IN HAWAII

(6) ALL RATE MAKING DESIGNS AND STRUCTURES PROVIDE STRONG INCENTIVES THAT AFFECT UTILITY PERFORMANCE.

Performance based ratemaking is a "term of art" that refers to several innovative approaches to rate structure that focus on financial incentives to promote desired utility behavior (performance). It is important to realize that all utility rate making structures provide strong incentives that affect utility performance, including the existing rate making structures. The effectiveness of the incentives inherent in the existing ratemaking structures should not be ignored.

(7) PBR APPROACHES SHOULD PROVIDE EXPLICIT MEANS TO ENSURE MAINTAINANCE AND IMPROVEMENT OF CUSTOMER SERVICE QUALITY.

It is essential to ensure that cost reductions and "efficiency" objectives rewarded by performance based rates are not attained at the expense of the level of customer service quality.

PARAGRAPH 40: SIMULATION OF THE POWER MARKET IN HAWAII

(8) EXPECTATIONS REGARDING THE RESULTS OF QUANTITATIVE SIMULATION ANALYSIS SHOULD BE KEPT IN REALISTIC PERSPECTIVE.

The simulation analyses may *inform* and *educate* but they should not be expected to *decide* a rate structure.

The simulations will provide valuable information. The formalism required to perform the simulations requires a rigorous attention to details that could be otherwise overlooked. The simulations can provide information regarding how the complex interactions of the utility production systems and financial accounting systems will be affected by candidate rate structures. This is valuable, informative and educational.

The simulations will not, however, take all of the necessary factors into account. For example, the simulated result of a candidate rate structure may be different than the actual result if some unforeseen detail is overlooked. The vulnerability of different rate structures to being "gamed" by the utility is important and necessary to consider but is not straightforward to simulate. The regulatory administrative overhead of different rate structures is an important factor that may not be quantified by the simulations.

The Commission is committing a substantial amount of investment into the simulation process. The Concept Paper seems to put the simulation process at the center of the decision making process regarding a new rate making structure. In parts of the text it seems to be implied that the simulations will actually *be* the decision making process regarding a new rate making structure. I would assert that the simulations may prove very valuable but

the value lies in how the Commission and its staff are educated and informed by the process of conducting the simulations. In the end, it is unlikely that the simulations will spit out a discrete or sufficient answer that will resolve what should be done regarding any changes to rate making structures. This determination will ultimately have to be made by the Commission taking many important considerations into account in addition to the results of the simulations.

(9) THE OBJECTIVES OF THE SIMULATION ANALYSES SHOULD BE OPENLY DISCUSSED.

It should be discussed and clarified (1) what is to be determined and (2) what is to be optimized using the quantitative simulation analysis. This discussion must be informed by persons familiar with the simulation model and how it can be used. The discussion should also include the perspectives of the stakeholders regarding what attributes the simulation will attempt to optimize and how the results will be used in deciding about a rate structure. This discussion may include substantial technical detail but it should also encompass the scope of policy questions that are most important to decision makers.

For example, the Concept Paper identifies one optimization criterion for the resource capacity expansion and production cost simulations:

> The objective function of the optimization models is to meet load at lowest dispatch cost. In the absence of any demand elasticity, dispatch cost is the relevant measure of social welfare. In the presence of demand elasticity, which allows a downward sloping demand curve, the sum of consumer surplus and producer surplus constitutes the relevant measure of social welfare. (paragraph 36. p.14)

One question is whether this is a correct criterion to use as a proxy for social welfare in capacity expansion and production costing optimization. Should emissions impacts, fossil fuel consumption factors or other factors be considered in the optimization function for system lambda? What are the constituents of consumer and producer surplus?

A bigger question is how rate structures are going to be evaluated or “optimized” in the simulation analyses. The criterion noted above is identified for a relatively resolute quantity in the simulations (resource cost). The larger objective of the simulation process is the determination of a rate structure. This is a substantially more complex and elusive objective. What objectives and measures of attainment will be applied to evaluating candidate rate structures? This needs to be clarified in terms that understandable and meaningful to the stakeholders and decision makers.

(10) THE ALGORITHMS OF THE SIMULATION ANALYSES SHOULD BE OPENLY IDENTIFIED AND DISCUSSED.

Simulation models can be complex. In order to be meaningful for making decisions, however, they need to be clearly understood. The algorithms used in the simulation analyses should be openly identified, explained, discussed and understood by the stakeholders and decision makers. The complexity of the algorithms should not be invoked as an excuse from the responsibility of the modelers to explain clearly in accurate and understandable terms what happens in the simulation analyses. Proprietary veils regarding

disclosure of algorithms should be categorically prohibited by the Commission as a fatal flaw of the simulations.

PARAGRAPH 46: SIMULATION OF COST-BASED REGULATION RATE STRUCTURE OPTIONS

(11) CANDIDATE RATE DESIGNS UNDER CONTINUATION OF COST-BASED REGULATION.

The portfolio of candidate rate structures to be considered could include specific mechanisms that do not entirely reform the existing rate making structure. Some of these options could be considered in conjunction with one another. These include some administrative as well as rate design options:

- Shareholder incentive mechanisms for implementation of efficiency and/or renewable resources
- Alignment of utility executive and manager salary incentives with the objectives of Act 95 and the rate making structure
- Revenue decoupling mechanisms (including approaches similar to a revenue per customer cap PBR approach)
- Regularly scheduled rate cases
- Modifications to the fuel adjustment mechanism, including limiting adjustment to partial rather than full adjustment.
- Third party implementation of DSM programs
- Third party regulatory oversight of utility implemented DSM and/or renewable resource programs (similar to the role of the Contract Administrator under the Vermont Service Board)
- Rate design alternatives including time of use, inverted block, marginal cost-of-service rates and hook-up charges.
- Green pricing tariffs (real ones)

PARAGRAPH 53: SIMULATION OF PERFORMANCE BASED REGULATION RATE STRUCTURES

(12) THE SIMULATIONS OF PBR SHOULD INCLUDE ANALYSIS OF “REVENUE PER CUSTOMER” CAP APPROACHES THAT EFFECTIVELY DECOUPLE UTILITY INCENTIVES TO MAINTAIN OR INCREASE SALES VOLUMES.

(13) THE PUNCHLINE IS THE UTILITY BOTTOM LINE - ON THE MARGIN.

PBR is fundamentally Pavlovian. It is an approach to get utility management to behave in some desired ways by aligning corporate profitability with rate design objectives. Typical PBR objectives include:

- Reduce costs
- Increase company efficiency
- Increase production efficiency
- Maintain / improve service quality
- Implement renewable and efficiency resources

In order to promote these objectives from a PBR approach each of these (or other selected objectives) must have a perceivable effect on the utility company's profits. Put in the form of an economic equation: **the marginal attainment objectives must result in marginal changes in utility profits**. This is the crux of PBR that the simulation analyses should serve to enlighten.

PARAGRAPH 58: DETERMINING A RATE MAKING STRUCTURE

(14) EXPECTATIONS REGARDING THE RESULTS OF QUANTITATIVE SIMULATION ANALYSIS SHOULD BE KEPT IN REALISTIC PERSPECTIVE.

See the text of this comment number (8) above.