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	N.H.P.U.C. Case No. DG 18-041
STATE OF NEW HAMPSHIRE BEFORE THE PUBLIC UTILITIES COMMISSIO	Exhibit No. <u>42</u> Witness Panel # 1
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Re: EnergyNorth Natural Gas, Inc. d/b/a National Grid NH

2010 Integrated Resource Plan

DG 10-041

PREFILED REBUTTAL TESTIMONY OF ELIZABETH D. ARANGIO, A. LEO SILVESTRINI, AND THEODORE POE, JR.

June 29, 2011

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1 I. INTRODUCTION

2	Q.	Would	each	of	you	please	state	your	name,	position	with	National	Grid	and
3		busines	s addr	ress	for t	he reco	rd?							

- 4 A. [Ms. Arangio] My name is Elizabeth D. Arangio. I am the Director of Gas
 5 Supply Planning for National Grid. My address is 40 Sylvan Road, Waltham,
 6 MA 02451.
- 7
- 8 [Mr. Silvestrini] My name is A. Leo Silvestrini. I am the Manager of Gas Load
 9 Forecasting for National Grid. My address is 40 Sylvan Road, Waltham, MA
 10 02451.
- 11

[Mr. Poe] My name is Theodore Poe, Jr. I am a Lead Analyst in the Gas Load
Forecasting Group for National Grid. My address is 40 Sylvan Road, Waltham,
MA 02451.

15

16 Q. Please provide your professional and educational background.

A. Our professional and educational backgrounds are set forth in Attachments NG-1,
NG-2, and NG-3.

19

Q. Please explain your responsibilities in your positions with National Grid and your
role in preparing the Company's integrated resource plan ("IRP").

A. [Ms. Arangio] I am the Director of Gas Supply Planning with responsibility for
the gas-resource portfolio held by EnergyNorth Natural Gas, Inc. d/b/a National

1 Grid NH ("National Grid NH" or the "Company"). I am also responsible for gas 2 supply planning for the National Grid resource portfolios in Massachusetts, New 3 York, and Rhode Island. I have overall responsibility for the IRP that was 4 submitted in this proceeding. 5 6 [Mr. Silvestrini] As the Manager of Gas Load Forecasting, I am responsible for 7 forecasting gas loads and customer requirements for the National Grid NH, as 8 well as National Grid's other United States gas territories. My role in preparing 9 the IRP was supervising the development of the demand forecasting models and 10 the demand forecasts, and preparing the demand-side resource that was evaluated 11 as part of the resource portfolio. 12 13 [Mr. Poe] As a Lead Analyst in the Gas Load Forecasting Group, I am responsible 14 for forecasting the customer requirements for National Grid NH, as well as 15 National Grid's other United States gas territories. My role in preparing the IRP 16 was specifying the customer requirements, determining the planning standards, 17 and modeling the least-cost portfolio utilization for National Grid NH. 18 19 What is the purpose of your testimony? Q. 20 A. Our testimony is intended to set forth the Company's position on the five items

that Mr. McCluskey has labeled as his "recommendations" in his testimony in this
case. In addition, Mr. McCluskey listed a number of items that he called
"conclusions". Much of our testimony focuses on Mr. McCluskey's discussion of

1 the basis for his conclusions, because we believe it is important for the 2 Commission to have a fuller understanding of the issues identified in Mr. 3 McCluskey's testimony in order to ensure that the Commission has confidence in 4 the Company's resource planning process. Our testimony begins, however, with a 5 discussion of Mr. McCluskey's recommendations because it is the Company's 6 understanding that those recommendations are the actions Mr. McCluskey is 7 asking the Commission to take in this docket, while his conclusions simply 8 provide his own analytical background for those recommendations. If that 9 understanding is incorrect, we reserve the right to provide additional testimony regarding Mr. McCluskey's conclusions. 10

11

Q. On February 26, 2010, National Grid NH filed its 2010 Integrated Resource Plan
("IRP"), which is the subject of this proceeding. Was that IRP prepared by you or
under your direction?

15 A. Yes, it was prepared under our joint supervision.

16

17 Q. Is it true and correct to the best of your knowledge and belief?

A. At the time it was filed, it was true and correct to the best of our knowledge and belief. However, because of the passage of time, it is now outdated in a number of respects, which we will discuss to a limited extent later in our testimony. In addition, through the discovery process in this proceeding, it was determined that certain information provided in the IRP relating to the modeling of demand side

1		management ("DSM") resources was not accurate. We will discuss this in more
2		detail later in our testimony as well.
3		
4	II.	RESPONSE TO STAFF'S RECOMMENDATIONS
5	Q.	You indicated that Mr. McCluskey's testimony sets forth five recommendations.
6		What is the Company's position on those five recommendations?
7	A.	The Company met with the Commission staff on May 12, 2011 to discuss Mr.
8		McCluskey's recommendations, which are set forth on pages 7-8 of his testimony.
9		At that time and on a number of occasions since then, the Company has indicated,
10		both orally and in writing, that it is willing to accept all five recommendations
11		even though it does not agree with Mr. McCluskey's basis for making them.
12		
13	Q.	If the Company has indicated a willingness to accept all of Mr. McCluskey's
14		recommendations, why are you filing rebuttal testimony?
15	A.	The Company feels that it needs to file rebuttal testimony because, in addition to
16		the five recommendations set forth in Mr. McCluskey's testimony, the
17		Commission staff ("Staff") has informed the Company that it wants any docket
18		that the Commission opens for the purpose of examining the issue of excess
19		capacity to be based on the load forecast and supply portfolio contained in the IRP
20		filing from this docket, which was filed in February 2010 and which utilizes load
21		forecast and other data from mid-2009, rather than the more current and relevant
22		data that will be available approximately six months from now when the
23		Company expects to submit its February 2012 IRP. The Company strongly

believes that it makes no sense to use outdated information for such an important
analysis. In addition, the Company believes that Mr. McCluskey's testimony
casts the Company's resource planning process in an unfair light, and wants to be
sure that the Commission hears directly from the Company regarding its views on
the issues discussed in his testimony.

6

7 III. DISCUSSION OF BASIS FOR STAFF'S RECOMMENDATIONS

- 8 Q. You indicated that Mr. McCluskey's testimony set forth a number of conclusions
 9 that provided the basis for his recommendations. Which of those conclusions do
 10 you wish to address?
- 11 A. Our rebuttal testimony will focus on Mr. McCluskey's conclusions reached in his 12 supply-side assessment, particularly his conclusions that the Company has more 13 gas supply capacity than needed and that customers risk paying unnecessary gas 14 supply costs; and his demand-side assessment, particularly his conclusion that the 15 savings target for the Company's DSM resources presented in the filing does not 16 represent a practical target for supply planning purposes.
- 17
- 18

A. Supply-Side Assessment

- Q. Do you agree with Mr. McCluskey's assertion that the Company maintains excesspeak day capacity?
- A. Based on the demand forecast included in this filing, the Company does maintain
 assets in excess of its current peak day requirements.
- 23

1 Q. Is it unusual to have a mismatch in the supply/demand balance?

A. No. As the Commission is well aware, it is effectively impossible to perfectly
match supply with demand. As such, LDCs usually incur a 'lumpy investment'
when making additions to their supply portfolio, whereby the LDC adds a block,
or lump, of supply that exceeds current demand and then must 'grow' into it over
time to maximize the use of the resource.

7

Q. Does the Company take steps to manage resources that are not needed at a given
point in time in order to reduce the cost of those resources to customers?

10 A. Yes. This is a critical part of the Company's efforts to manage its resource 11 portfolio and minimize costs to customers. Since the Company must plan for its 12 peak day and peak season, which have approximately a once-in-forty-year chance 13 of occurrence, and because the resource investments have a lumpy nature even 14 outside of these occurrences, the Company will have underutilized assets for a 15 period of time until it grows into a new resource. The Company recognizes this 16 and, when it occurs, the Company does everything it reasonably can to mitigate 17 the cost of these assets by seeking opportunities in the marketplace to garner 18 value for the assets, which in turn is returned to customers as a credit to gas costs. 19 For instance, from November 2009 through October 2011, the Company engaged 20 in portfolio optimization activities, including several asset management 21 arrangements, which reduced the cost of gas to customers by more than \$2.1 22 million.

23

Q. How is it that the Company came to have capacity that is greater than what it
 requires to serve its customers on a peak day?

3 A. On page 10 of his testimony, Mr. McCluskey states that the capacity that he calls 4 excess resulted from: (1) the addition of 30,000 MMBtu per day of Tennessee Gas 5 Pipeline ('TGP') capacity effective November 1, 2009 associated with the 6 Concord Lateral expansion project; and, (2) the lower design day demand forecast 7 compared to the forecast in the Concord Lateral proceeding, attributable largely to 8 the recent downturn in the economy. What Mr. McCluskey fails to note is that 9 the Company committed to the Concord Lateral project only after it had been 10 reviewed and approved by the Commission, which hired an independent 11 consultant to advise it in reaching that conclusion. The Company made clear in 12 that proceeding (DG 07-101) that, given the large size of that commitment, it was 13 not willing to go forward with such a project without a determination *in advance* 14 that it was prudent to do so. Moreover, it is critical to look at the portfolio in its 15 entirety in order to understand how each decision affects the portfolio. While the 16 Company will obviously participate in any new docket opened by the 17 Commission to examine the Company's current resources, such a docket will 18 largely require the Commission to revisit the decisions that were made in the 19 Concord Lateral proceeding, a case in which Mr. McCluskey did not participate. 20 The Company is prepared to engage in such a discussion, but does not believe it is 21 a good use of the Commission's or the Company's time or resources. However, 22 Mr. McCluskey's preference to conduct such an examination based on the load 23 forecast in the 2010 IRP, rather than either the forecast on which the Concord 1 2

in the IRP filed in early 2012, is simply inappropriate.

3

4 In addition, Mr. McCluskey's testimony fails to recognize that National Grid NH 5 is in a relatively unusual situation because of its location at the end of the 6 interstate gas pipeline system. In their decision making, the Company and the 7 Commission must consider that the availability of citygate delivered interstate 8 pipeline capacity is limited because of the system's location on a lateral that is 9 served solely by TGP. If pipeline capacity is turned back to address the excess 10 capacity situation, there is absolutely no certainty that the same capacity would be 11 available if needed at some time in the future, whether it be in the short term, or 12 longer term. To the extent that a decision is made to retire on-system facilities to 13 address the excess capacity situation, the ability to replace them when needed is likely to be equally, if not more, problematic because of the cost, permitting, and 14 15 siting issues involved with constructing such facilities.

Lateral commitment was based or the more current forecast that will be included

16

Q. Does Mr. McCluskey's assertion of excess capacity take into account the seven-day storage requirement to which the Company must adhere?

A. Mr. McCluskey's assertion does not appear to take this into account. Rule Puc
506.03 requires the Company to maintain sufficient inventory in its supplemental
supply facilities (LNG and LPG) and/or hold sufficient trucking arrangements for
supplemental supplies to endure the weather observed during the cold snap from
January 9-15, 2004. The Company's acquisition of the incremental 30,000

1 MMBtu/day capacity in the Concord Lateral project served not only to address the 2 peak day and peak season shortfalls the Company was forecasting at the time, but 3 also to address the significant quantities of LNG and LPG that it needed to 4 purchase, transport, and store on behalf of its customers in order to adhere to the 5 seven-day storage requirement.

6

7 If Mr. McCluskey's solution to reducing the Company's present peak-day 8 deliverability excess is to decommission the storage of supplemental supplies in 9 addition to the vaporization equipment, which is what he concludes in his 10 testimony, then, as customer load continues to grow, the Company will find itself 11 with insufficient storage capacity to adhere to the requirements of Rule 506.03 12 and insufficient production capacity to use the inventory. It would then have one 13 of three options: to site one or more new storage facilities, to increase its reliance 14 on peak period trucking of supplemental supplies to replenish what limited 15 storage capacity remained, or to contract for additional pipeline capacity or 16 citygate supply deliveries.

17

18 Q. What is the Company's current supply/demand balance?

A. The Company's peak-day supply/demand balance, based on the demand forecast
in the instant filing, was provided in the Company's response to Data Request
Staff 1-49. The Company has available 180,233 MMBtu/day of deliverability
from the interstate pipeline system plus its supplemental supply facilities. The
forecasted peak day for the 2010/11 winter was 140,043 MMBtu.

- 1 Q. Does the Company have concerns with giving up existing capacity and/or on-
- 2 system assets?

13

3 A. Yes, as the Commission noted in its order in the Concord Lateral docket:

4 Liberty [the Commission's consultant] stated that capacity choices involve 5 long lead times [footnote omitted] and if the Company can foresee a 6 requirement for additional capacity as soon as three years from now as 7 indicated by one forecasting model used for some of the discovery 8 responses submitted by the Company in this docket, the time to start 9 planning for the next increment of capacity is now. Liberty urged that 10 given the lengthy nature of the facility siting and approvals process, consultations to support the possible development of on-system options 11 should begin soon. Order No. 24,825 at 15. 12

14 As one example of this concern regarding long lead times, the Commission noted 15 that Liberty had "related that even with a site in hand and a willing community, it 16 took a Connecticut gas utility six and a half years to go from the initial proposal to 17 the DPUC for an LNG-based peaking facility to the facility being placed in 18 service." Id. The abandonment of any of the Company's assets for an interim 19 period, as appears to be suggested by Mr. McCluskey, is likely to result in higher, 20 not lower, costs for customers in the long run, owing to the fact that once existing 21 low-cost resources, like those in the portfolio, are turned back or 22 decommissioned, they will not be available to be reactivated when needed. 23 Instead, the Company would be forced to contract for or site and construct new, 24 more expensive, longer-term assets to replace those which were terminated. Of 25 course, these issues can and will be developed in far more detail if the 26 Commission opens another proceeding as requested by Mr. McCluskey, but we 27 wanted to highlight some of the reasons that we believe that such a proceeding is 28 not a good use of Commission or Company resources and time.

1

B. Demand-Side Management Assessment

- Q. Mr. McCluskey's testimony also criticizes the Company's treatment of demandside resources in its IRP. Does the Company agree with Mr. McCluskey's
 critique and, if not, why not?
- 5 A. The Company does not agree with Mr. McCluskey's critique, other than his 6 observation that the SENDOUT[®] Model used by the Company to evaluate 7 demand-side resources contained certain source code inadequacies that resulted in 8 the model producing incorrect results for selecting the optimal level of DSM 9 when used in the resource mix mode. (Mr. McCluskey's testimony provides an 10 explanation on pages 23-24 of what the resource mix mode is and how it differs 11 from the optimization mode.)
- 12
- Q. What is the Company doing to address the inadequacy of the SENDOUT[®] Model
 and what is the significance of those problems?
- First, we should explain that the SENDOUT[®] Model is not a resource planning 15 A. 16 model that was developed by National Grid. Rather, it is a model that was 17 developed by a company named Ventyx, which licenses the model to National 18 Grid and numerous other gas distribution utilities throughout the country. Based 19 on Mr. McCluskey's recommendation in the Company's last IRP proceeding, the 20 Commission ordered the Company to reflect DSM resources in its IRP in the 21 same manner as supply side resources, rather than as a reduction to projected load 22 as had been done in previous IRP filings. Although, to the Company's knowledge, there are few gas utilities that use the SENDOUT[®] Model in this 23

1		manner, it was the Company's understanding that the model was capable of
2		incorporating DSM resources into the planning process in this manner. As Mr.
3		McCluskey correctly points out in his testimony, during the discovery process in
4		this proceeding, the Company discovered that there were errors in how
5		SENDOUT [®] was modeling DSM in the resource mix mode. The Company
6		contacted Ventyx, and Ventyx determined that its source code was in fact not
7		sufficient to perform the DSM modeling in the manner that the Commission had
8		ordered. Ventyx has subsequently agreed to provide an updated version of the
9		model that would be able to do so.
10		
11	Q.	What is the status of those efforts?
12	A.	Ventyx provided an updated version of SENDOUT® in May 2011, but testing of
13		that version by the Company has since revealed that the updated version is still
14		not producing correct results. The Company is hopeful that the remaining issues
15		will be resolved in the next few months, but at this point it still is unable to model
16		the DSM resources in the manner that Mr. McCluskey is seeking.
17		
18	Q.	Are you aware of other utilities that have used SENDOUT [®] in the manner that
19		Mr. McCluskey is seeking?
20	A.	Yes. In a telephone conversation with an employee of Avista, a gas utility serving
21		eastern Washington, Idaho, and Oregon, the Company learned that Avista uses the
22		SENDOUT [®] model in the manner that Mr. McCluskey is seeking. We understand
23		that Avista uses some form of off-line calculations to attempt to address the flaws

in the model calculations discovered by the Company, but don't have the details
of how Avista performs these adjustments because once Ventyx agreed to fix the
source code of the SENDOUT[®] model we did not pursue alternative fixes.
Therefore, we cannot say if Avista's approach would even be able to meet Mr.
McCluskey's goals.

6

7 Q. Can the Company comply with the Commission's order anyway?

8 A. Yes, and it has. In its Order 24,941 (dated February 13, 2009) in the Company's 9 last IRP proceeding, the Commission ordered that "...(t)he Company should 10 describe its process for integrating demand-side and supply-side resources so that 11 customer needs will be met at the lowest reasonable cost while maintaining 12 reliability and taking into account other non-cost planning criteria." The 13 Company has in fact demonstrated that its energy efficiency programs can be modeled as supply sources. The actual outputs of the SENDOUT[®] model turn out 14 15 to be inaccurate because of the flaws in the model, but the IRP nevertheless shows 16 the process for how demand and supply-side resources would be integrated in the manner ordered by the Commission. Once the flaws in the SENDOUT[®] model 17 18 are corrected by Ventyx, the Company can properly use the resource mix mode to 19 demonstrate the least-cost selection of demand-side and supply-side resource, 20 something we expect to be able to do in our next IRP filing in February 2012.

21

- Q. Aside from the issue of the SENDOUT[®] model's ability to perform the analysis
 that Mr. McCluskey is requesting, do you have other concerns regarding the
 analysis he is insisting the Company undertake in this docket?
- A. Yes. Mr. McCluskey's testimony blurs the distinction between the role of a supply plan that incorporates demand-side resources in the portfolio and an economic potential study that quantifies the maximum amount of demand-side resources that could be available if there were no practical constraints on implementation, and the only consideration were the relative costs of the resources.
- 10

11 In the Commission's Order No. 24,941 approving the Company's last IRP filing, 12 it required the Company to "include a systematic evaluation of reasonably 13 available demand-side management programs ..." The Commission further noted 14 that it expected that "...the Company's evaluation of demand-side resources will 15 be done on an equivalent basis with its evaluation supply-side resources..." The 16 Company's current IRP complies with these requirements. In doing so, the 17 Company evaluated the results of the technical potential study conducted by GDS 18 Associates, "Additional Opportunities for Energy Efficiency in New Hampshire," 19 and determined that the "Potentially Available Scenario" was the most realistic 20 scenario in the study. But, because this upper limit resulted in 8.7 times the 2010 21 goal in the Company's approved energy efficiency program at the time the filing 22 was prepared, the Company determined that this limit was not a practical target 23 for supply planning purposes. The goals in the current energy efficiency program

were set based on the number and types of measures that were cost effective for 1 2 specific customer classes at a budget level that was acceptable to the parties in the energy efficiency proceeding. As the Company states on page IV-7 of the IRP 3 4 filing, to increase the level of energy efficiency savings for the supply plan, it 5 allowed the savings to increase only for those measures that are scalable. It did 6 not increase the level of savings from programs that are demonstration projects, 7 information dissemination, or equipment replacement. Spending more money on 8 demonstration projects or information dissemination is unlikely to result in more 9 energy savings that is of a level of reliability that can be included in a supply plan. 10 The Company's experience indicates that incentives that involve equipment 11 replacement are effective mostly at the time of equipment breakdown or planned 12 equipment replacement. Such incentives do not tend to accelerate the decision to 13 replace. Based on the experience of the Company's program administrators 14 implementing the approved programs and the effort required to achieve the 15 current program goals, the Company determined that a practical limit on the 16 increase in the number of installations only for those measures that are scalable 17 was two times the goal. For these reasons, the Company concluded that the 18 savings resulting from the "Potentially Available Scenario" in the GDS Study, at 19 8.7 times the entire 2010 goal was not practical. Therefore, for purposes of 20 evaluating demand-side resources, the Company established the cost and savings 21 criteria of various levels of demand-side resources based on data provided in its 22 approved energy efficiency programs and determined which programs could yield 23 additional savings by increasing the level of incentives to participants. Using this information, and the practical limits of achieving certain levels of savings
described above, the Company modeled the savings as supply side resources
using the SENDOUT[®] Model and allowed the optimization model to determine
the amount of demand-side management resources in the supply plan (pp IV-3 –
IV-8 of the Plan).

6

7 Q. How does the Company's approach satisfy the requirements of an IRP, given Mr. 8 McCluskey's criticisms of the level of DSM measures modeled by the Company? 9 A. Mr. McCluskey argues that the modeling of DSM resources in the IRP suffers 10 from unreasonable constraints, such as limiting the number of supply contracts 11 that can be displaced by demand-side management resources and limiting the size 12 of the demand-side resources. Herein lies the distinction between incorporating 13 demand-side resources in a supply plan and performing an economic potential 14 study for demand-side resources. The Company's approach optimizes demand-15 side resources given the constraints of the resources in the existing portfolio and 16 the practical limits of implementing energy efficiency. The Company looked at 17 displacing supply-side resources with more cost-effective demand-side resources, 18 but only within the constraints of existing contracts and tariffs, and only within 19 the practical limits of implementing energy efficiency measures based on the 20 demonstrated results of having implemented those measures over a period of 21 years. It did not attempt to redesign the entire resource portfolio by allowing the 22 maximum potential of economically available demand-side resources to displace 23 every available supply resource. Nor, does the Company think it would be prudent 1 to do so. A supply plan is a practical tool to ensure that the Company has 2 adequate least-cost supplies to meet customer demands. It is not an academic exercise to determine what may be theoretically possible under ideal 3 4 circumstances. While the Company recognizes that such an academic exercise has 5 value in creating a scenario under those ideal circumstances and identifying 6 broader potential, such an exercise is best done apart from a supply plan. To 7 conflate the two creates a serious risk of an inadequate supply plan, something 8 which would not be in the public interest and would pose considerable risk to 9 customers.

10

11 Q. How do you respond to Mr. McCluskey's other conclusions regarding the12 Company's evaluation of DSM resources?

Mr. McCluskey concludes that the flaws in the Company's approach include: (1) 13 A. conducting the cost-benefit analysis over a five-year period instead of the useful 14 15 life of the demand-side resources; (2) neglecting to present value and sum the 16 resulting annual cost savings; (3) annualizing the cost of the demand-side 17 resources; and, (4) neglecting to escalate the demand charges in gas supply 18 contracts. The issues raised by Mr. McCluskey in this regard are refinements that 19 can readily be made to the Company's modeling effort. In performing this first-20 ever integrated resource modeling effort, the Company addressed the conditions 21 of the Commission order by developing a supply plan that incorporates demand-22 side resources in the portfolio and the least-cost selection of pipeline capacity 23 contracts vs. the levelized costs of various DSM measures based on their expected lifetimes. Its assumption of constant pipeline demand charges in nominal dollars
is the same assumption it has used in prior supply plan filings, based on its
historical experience. If Mr. McCluskey would like to see refinements to that
approach, the Company stands ready to work with him on such an effort, but the
fact that such refinements are not included in the Company's plan does not make
it inadequate.

- 7
- 8 IV. CONCLUSION

9 Q. What action is the Company requesting the Commission to take in this10 proceeding?

11 The Company urges the Commission to approve its IRP as adequate and A. 12 reasonable, and find it to be in compliance with the requirements of its order in 13 the prior IRP proceeding. We should note that, while Mr. McCluskey states on 14 page 7, line 14 of his testimony that he believes the IRP is inadequate, he does not 15 include such a statement in his list of recommendations and in fact concludes that 16 the Company's positions on the planning period, the demand forecast, the design 17 planning standards and the capacity reserve are all reasonable and consistent with 18 the Commission's order. Finally, as noted at the beginning of our testimony, the 19 Company is willing to proceed on the basis of the five recommendations put 20 forward by Mr. McCluskey. However, if the Commission determines that it is 21 appropriate to open a proceeding to consider the excess capacity in the 22 Company's resource portfolio, it urges the Commission to do so based on the 23 information provided in the Company's February 2012 IRP filing.

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- 1 Q. Does this conclude your testimony?
- 2 A. Yes, it does.