

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO**

\*\*\*\*\*

IN THE MATTER OF THE )  
APPLICATION OF THE CITY OF )  
BOULDER, COLORADO FOR )  
APPROVAL OF THE PROPOSED )  
TRANSFER OF ASSETS FROM )  
PUBLIC SERVICE COMPANY OF )  
COLORADO TO THE CITY AND )  
ASSOCIATED AUTHORIZATIONS )  
AND RELIEF )

**PROCEEDING NO. 15A-0589E**

**DIRECT TESTIMONY AND ATTACHMENTS OF DAVID L. WOOD**

**ON**

**BEHALF OF**

**THE CITY OF BOULDER**



**JULY 7, 2015**



## SUMMARY OF TESTIMONY

David L. Wood is employed by Schneider Electric as the Director of Utility Consulting Services. Since 1986, Mr. Wood's professional career has focused on the planning, design, and operation of electrical systems at the local transmission, distribution, and substation level. At Austin Energy, where he worked for over 20 years, he had the opportunity to work on system improvements and programs for a utility with goals very similar to Boulder's. The diversity of positions he has held over time has given him the opportunity to see what works and what does not.

Mr. Wood reviewed the plan for separation of ownership, which was prepared by Boulder witness Thomas A. Ghidossi, P.E., and is described in Mr. Ghidossi's Direct Testimony. As part of this review, he considered the list of assets to be transferred; the plans for "Interconnection Points," that is, those locations where equipment will be installed to interconnect the City's system with PSCo's system; and the specific means of separating ownership within each substation.

In his testimony, Mr. Wood describes how the plan for separation of ownership complies with what is standard in the industry and good utility operating practice. He specifically identifies as being critical to the plan (1) the need to minimize the points of interconnection and (2) to promote the safety of utility workers. Mr. Wood concludes that the plan for separation of ownership (a) is the appropriate way to maintain the operation of the system as it was designed and is operated today, (b) prevents the construction of unnecessary duplicate facilities, and (c) ensures that customers are not harmed and reliability is maintained for all customers.

Turning next to the plans for operating the new municipal electric utility during startup, the transition period, and in ongoing operations as described in the testimony of Boulder witness

Robert J. Harberg, Mr. Wood considered whether the City's plans would create a functioning utility that would be financially sound; deliver the expected level of customer service, including meeting reliability expectations; and create an organization with the resources necessary to deliver all of the functions needed for an operating electric utility. Mr. Wood concludes that the City's plan is consistent with good utility operating practice and includes all of the components necessary for the new utility, Boulder Light & Power, to operate safely and provide a level of reliability that is at least as good as customers receive today. Mr. Wood reviews the City's plan to complete some tasks in-house and contract out other tasks and determines that this division of labors enhances the abilities of each and leads to the creation of a functioning utility that will deliver the expected level of customer service.

Finally, Mr. Wood describes the wealth of information that Public Service Company of Colorado ("PSCo") has in its possession related to the history of the system that will be necessary to share with the City to avoid hampering the successful seamless and transparent transition to a City-operated electric utility. Mr. Wood points out that utilities across the country cooperate to ensure the successful operation of the electric grid and concludes that cooperation and coordination between Boulder Light & Power and PSCo will be essential to protect the public interest and the safety of the line workers of each utility.

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**LIST OF ATTACHMENTS**

DLW-1	Statement of Qualifications for David L. Wood
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**I. INTRODUCTION AND QUALIFICATIONS**

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is David L. Wood. My business address is 9101 Burnet Road, Suite 200,  
3 Austin, Texas 78758.

4 **Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?**

5 A. I am employed by Schneider Electric as the Director of Utility Consulting Services.

6 **Q. WHOM ARE YOU REPRESENTING IN THIS PROCEEDING?**

7 A. I am testifying on behalf of the City of Boulder (“Boulder” or the “City”).

8 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.**

9 A. I hold a Bachelor of Science degree in Electrical Engineering from Mississippi State  
10 University and I completed the University of Idaho Utility Executive Course. I am a  
11 registered Texas Professional Engineer.

12 **Q. PLEASE DESCRIBE YOUR EXPERIENCE WITH ELECTRIC POWER  
13 SYSTEMS?**

14 A. I started my professional career at TU Electric, now Oncor Electric Delivery Company,  
15 LLC, in 1986 at Dallas, Texas. While at TU Electric, I worked in two primary areas:  
16 transmission planning and power plant engineering. In 1992, I joined the City of Austin,  
17 Texas electric utility, which does business as Austin Energy (“AE”), as a substation and  
18 major equipment engineer. At AE, I held various professional, supervisory, and  
19 managerial positions with increasing levels of responsibility. In 2010, I became Vice  
20 President of AE’s transmission and distribution division, Electric Service Delivery  
21 (“ESD”). In 2013, I was promoted to Senior Vice President of ESD. While serving as

1 VP and Senior VP of ESD, I had executive responsibility for all aspects of AE's  
2 transmission, substation, distribution, and metering design, engineering, planning,  
3 construction, maintenance, and operations.

4 I retired from AE in 2015 and started working for Schneider Electric as the  
5 Director of Utility Consulting Services. As the Director, my main area of responsibility  
6 includes becoming a trusted advisor to the electric utility community on activities  
7 associated with electric utility business and technical operations including the adoption of  
8 new business models associated with the on-going development of the "Smart Utility."

9 **Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE A STATE PUBLIC**  
10 **UTILITIES COMMISSION?**

11 A. Yes, I was responsible for submitting testimony and acting as an expert witness for  
12 Distribution Activities during AE's rate proceeding in 2012 before the Public Utility  
13 Commission of Texas ("PUCT"). The case was generated from a petition filed by AE's  
14 customers who reside outside the city limits of Austin. The filing and my testimony may  
15 be found under "PETITION TO REVIEW AUSTIN RATE ORDINANCE NO.  
16 20120607-055". I was the designated expert witness for Distribution Activities. The  
17 purpose of my testimony was to describe the functions of ESD: distribution capital  
18 improvements, distribution operations and maintenance, and quality of service, along  
19 with describing the budgeting process and cost monitoring and control. My testimony  
20 explained why ESD functions are reasonable and necessary. Austin Energy settled  
21 before the official Hearing started so I didn't take the stand to deliver verbal testimony to  
22 the PUCT. I have not previously filed testimony before the Colorado Public Utilities  
23 Commission ("PUC" or the "Commission").



1 **Q. HOW DOES YOUR EXPERIENCE IN AUSTIN AFFECT YOUR REVIEW OF**  
2 **BOULDER'S PLANS?**

3 A. The cities of Austin and Boulder have very similar community goals and ambitions.  
4 They both have a highly educated, innovative, and involved citizenry; they both have  
5 major universities; and they both serve high tech customers. AE is an example of the  
6 type of electric utility that Boulder is proposing to create. The governance of AE  
7 exemplifies the concept of local control. I experienced firsthand how the involvement of  
8 local citizen's can drive and shape their electric utility if those citizen's have control.  
9 This can be seen in many ways including: (1) the access that Austin's citizens have to all  
10 decision makers, from the AE Management and Executive Team to the Austin City  
11 Council which acts as the AE's Board of Directors; (2) the openness and sharing of  
12 information and the active solicitation of citizen input into the development of strategic  
13 plans and objectives; (3) the achieving of goals and objectives that lead the industry, such  
14 as the deployment of renewable generation and energy efficiency and demand reduction  
15 programs; (4) a focus on operational excellence and cost containment; (5) the use of  
16 innovative technology to achieve real world goals; and (6) maintaining rates that are in  
17 the lower 50% of utilities in the State of Texas.

18 **Q. YOU STATE IN YOUR TESTIMONY THAT AUSTIN ENERGY HAS**  
19 **DEPLOYED MANY INDUSTRY LEADING PROGRAMS. COULD YOU**  
20 **PROVIDE EXAMPLES OF THESE PROGRAMS AND EXPLAIN HOW THESE**  
21 **PROGRAMS COMPARE TO BOULDER'S ASPIRATIONS FOR ITS NEW**  
22 **MUNICIPAL ELECTRIC UTILITY?**

1 A. Austin Energy has deployed many industry-leading programs. These include the use of  
2 renewable energy and the deployment of energy efficiency and demand reduction  
3 programs. Austin Energy will meet its customers' energy needs with 35% renewable  
4 energy by the end of 2015. Austin Energy has achieved over 1000 MWs of energy  
5 efficiency and demand reduction savings to reduce its annual peak to just 2500 MWs.  
6 This is a reduction of over 25%. Both of these achievements are industry leading.

7 AE also maintains high reliability for its customers. AE has achieved a SAIDI of  
8 45 minutes per customer per year and a SAIFI of 0.6 interruptions per customer per year.  
9 This places AE in the top decile of all U.S. electric utilities (Municipals, Co-Operatives,  
10 and Investor Owned Utilities) for reliability delivered to its customers.

11 The programs described above, plus many others, have been implemented by AE  
12 while maintaining rates that are in the lower 50% of utilities in the State of Texas and  
13 maintaining a strong balance sheet. Boulder's voter-approved ballot measure directs the  
14 new electric utility to: (1) ensure that the rates offered are equal to or less than those  
15 offered by Public Service Company of Colorado ("PSCo") at the time of acquisition; (2)  
16 have sufficient revenue to cover operating costs and debt plus an amount equal to 25% of  
17 the debt payments; (3) maintain reliability comparable to that being offered by PSCo; (4)  
18 have a plan to increase renewable energy use; and (5) have a plan to decrease greenhouse  
19 gas emissions. AE is living proof that a municipally-owned electric utility can meet or  
20 exceed all of the goals specified in Boulder's ballot initiative.

21 **Q. DO YOU HAVE A STATEMENT OF QUALIFICATIONS THAT PRESENTS**  
22 **YOUR EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS AND**  
23 **EXPERIENCE IN MORE DETAIL?**

1 A. Yes. A copy of my Statement of Qualifications is included as **Attachment DLW-1**.

**II. PURPOSE OF TESTIMONY**

2 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

3 A. I was asked to conduct a review of two components of the City's plan: the plan for the  
4 separation of the electric utility system, as described in the direct testimony of Boulder  
5 witness Thomas A. Ghidossi, P.E., and the plan for operating the new electric utility,  
6 Boulder Light & Power, during startup, the transition period, and in ongoing operations,  
7 as described in the Direct Testimony of Boulder witness Robert J. Harberg. Based on my  
8 analysis, expertise, and judgment, I conclude that the City's plans are reasonable and, if  
9 approved and implemented, will result in a utility that will meet or exceed the  
10 requirements discussed above that were set forth by the voters in Boulder.

11 **Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR DIRECT**  
12 **TESTIMONY?**

13 A. Yes. Please see **Attachment DLW-1**, my Statement of Qualifications.

**III. THE REVIEW PROCESS**

14 **Q. WHY WERE YOU ASKED TO PERFORM A REVIEW OF THE PROPOSED**  
15 **ELECTRIC SYSTEM SEPARATION PLAN AND THE PLAN FOR OPERATING**  
16 **BOULDER LIGHT & POWER DURING STARTUP, THE TRANSITION**  
17 **PERIOD, AND IN ONGOING OPERATIONS?**

18 A. I was asked to conduct a review of these plans to evaluate the likelihood for their success  
19 and advise the City whether any factors that should be evaluated were missing from

1 Boulder's plans. The depth of Schneider Electric's experience and knowledge of  
2 Boulder's project and my experience with a progressive electric utility with goals similar  
3 to Boulder, contributed to the City asking me to conduct this review.

4 **Q. WHY ARE YOU PARTICULARLY QUALIFIED TO CONDUCT A REVIEW OF**  
5 **THE CITY'S ELECTRIC SYSTEM SEPARATION PLAN AND OPERATION**  
6 **PLAN?**

7 A. My professional career since 1986 has focused on the planning, design, and operation of  
8 electrical systems at the local transmission, distribution, and substation level. The  
9 diversity of the positions that I have held over time have given me the opportunity to see  
10 what works and what does not. For example, I was an executive at AE, a progressive,  
11 municipal electric utility where I was responsible for the safe and reliable operation of the  
12 transmission and distribution system that serves over 400,000 customers with a peak load  
13 of over 2500 MW. The City's planned electric utility will serve approximately 63,000  
14 customers with a peak load of over 250 MW. Municipal electric utilities that have  
15 substation and distribution assets have very similar functions and needs. My experience  
16 with AE is directly applicable to Boulder Light & Power, whose operations will closely  
17 mirror the operations of AE's substation and distribution systems. In addition, the goals  
18 for the use of the substation and distribution systems are very similar. These goals  
19 include providing the citizens of both cities with a highly reliable and cost efficient  
20 electric system that facilitates the integration of renewable energy and the deployment of  
21 reliability enhancing technology such as microgrids. Both cities also envision that the  
22 electric system will become an enabler of innovative business models aimed at allowing  
23 multidirectional power flow that will facilitate the conversion of the customer from a

1 consumer of electricity to a “prosumer,” in which the customer takes on aspects of both a  
2 consumer and a producer of electricity.

3 **Q. WHAT DID YOU DO TO PREPARE FOR YOUR REVIEW OF THE CITY’S**  
4 **PLANS?**

5 A. I reviewed the plan as presented in Mr. Ghidossi’s Direct Testimony. I also reviewed  
6 various publicly available documents on the City’s web sites. I reviewed Boulder’s plans  
7 and GIS information that is not publicly available because they contain the locations of  
8 critical energy infrastructure. I conducted a webcast interview directly with Mr. Ghidossi  
9 during which he presented the plan of how separation of the existing system between the  
10 City and PSCo. I also had conversations with Mr. Ghidossi where he answered specific  
11 questions that I had.

12 With regard to the City’s plan for operation during startup, the transition period,  
13 and in ongoing operations, I reviewed the plan as presented in Mr. Harberg’s Direct  
14 Testimony and I also reviewed various publicly available documents on the City’s web  
15 sites. I also had conversations with Mr. Harberg in which he answered specific questions  
16 that I had.

17 **Q. ARE THERE LIMITATIONS TO YOUR UNDERSTANDING AND**  
18 **KNOWLEDGE OF THE ELECTRIC SYSTEM IN BOULDER AND THE CITY’S**  
19 **PLANS FOR THE PROJECT?**

20 A. The limits of my understanding and knowledge are bounded by the material presented to  
21 me and information that is publicly available. I did not have access to any of the  
22 information from PSCo that will be necessary to finalize these plans. As explained by  
23 both Mr. Ghidossi and Mr. Harberg in their Direct Testimonies, the City is limited by the

1 lack of information available at this time. Each also states in his Direct Testimony that as  
2 additional information becomes available through discovery, it will be used to modify or  
3 update the City's proposal, if appropriate. This may result in modification of my Direct  
4 Testimony depending on whether the change is material.

**IV. BOULDER'S ELECTRIC SYSTEM PLAN FOR**  
**SEPARATION OF OWNERSHIP**

5 **Q. DO YOU AGREE WITH THE CRITERIA THAT MR. GHIDOSI DEVELOPED**  
6 **TO GUIDE THE PREPARATION OF THE PLAN FOR THE ELECTRIC**  
7 **SYSTEM SEPARATION OR WOULD YOU HAVE USED DIFFERENT**  
8 **CRITERIA?**

9 A. I agree with the criteria identified by Mr. Ghidossi. The criteria are consistent with the  
10 requirements laid out by the City and with sound electric utility operating practices and  
11 principles. I would have added two more points to the list: (a) minimizing the number of  
12 interconnections and (b) safety of utility line workers of both PSCo and Boulder Light &  
13 Power. I would have listed those items as separate criteria because, to a utility  
14 professional like me, the safety of line workers is critical and you want a system that is as  
15 straightforward to maintain and repair. However, notwithstanding the fact that Mr.  
16 Ghidossi did not separately list these criteria, Mr. Ghidossi has covered both of these  
17 issues in his Direct Testimony. Thus, while he did not list these issues as separate  
18 criteria, these concerns are clearly important to his analysis.

1 **Q. ARE SOME OF THE CRITERIA MORE CRITICAL THAN OTHERS IN YOUR**  
2 **JUDGMENT?**

3 A. Yes, of special importance are the criteria specifying that the number of distribution  
4 interconnection points be minimized and the elimination of duplicate distribution electric  
5 facilities. The ability for both future City line personnel and PSCo line personnel to  
6 safely and efficiently operate and maintain their respective systems is enhanced by both  
7 of these criteria.

8 Additional interconnections create safety issues for line personnel by potentially  
9 creating confusion in the field as to what assets belong to which utility. By identifying a  
10 specific area with clear boundaries as the place of separation, defined in Mr. Ghidossi's  
11 Direct Testimony as the "Acquisition Area," the City was able to limit the number of  
12 distribution interconnections to nine (four normally closed and five normally open). This  
13 feature of the City's plan allowed the distribution assets inside the Acquisition Area to be  
14 wholly owned by one utility. This will provide line personnel with a clear and  
15 unambiguous line of demarcation of responsibility for outages. In other words, PSCo  
16 line crews will know that they only have the defined interconnection switching  
17 equipment to check when performing maintenance on PSCo-owned assets beyond the  
18 interconnection point and that any issue within the Acquisition Area is the responsibility  
19 of Boulder Light & Power.

20 **Q. WHY ARE CLEAR LINES OF DEMARCATION IMPORTANT?**

21 A. Having clear lines of demarcation makes it simpler to remotely monitor the equipment at  
22 each interconnection point at each utility's control center and that, in turn, facilitates the  
23 quick, efficient dispatch of the responsible utility's line personnel to respond to trouble

1 on their respective system. In addition, by having a plan that calls for one utility to be  
2 responsible for all distribution assets within the Acquisition Area, the duplication of  
3 distribution facilities is eliminated, thus reducing costs to both PSCo and Boulder Light  
4 & Power, which benefits both utilities' customers. By minimizing the number of  
5 interconnection points and eliminating duplicate facilities, both Boulder and PSCo will be  
6 able to operate their portions of the system without unnecessary safety concerns for their  
7 line personnel.

8           Conversely, if the Acquisition Area boundaries were to follow political  
9 boundaries, then situations would arise where PSCo and City line workers would be  
10 working within a few spans of distribution of each other. This would likely create a  
11 situation where the right hand doesn't know what the left is doing, which creates great  
12 concern for line worker safety.

13 **Q. BEFORE YOU ANALYZE THE CITY'S PLAN, CAN YOU EXPLAIN WHY**  
14 **UTILITY INTERCONNECTIONS ARE IMPORTANT?**

15 A. Electric utility interconnections allow the transfer of power over one utility's lines to  
16 another. It is done all across the country as power is generated at locations different from  
17 where it is used. The county has three interconnected transmission electrical grids that  
18 allow for the transmission of electric power over long distances. Many utilities are  
19 interconnected at the transmission voltage level to allow of this interchange of power.  
20 Utilities are also commonly interconnected at substations, where two or more utilities  
21 share a substation to provide service to their customers. While not as common as  
22 interconnections of transmission systems and at substations, the interconnection of  
23 distribution systems does occur in the electric utility industry. As presented in Mr.



1 Harberg's Direct Testimony, PSCo and Loveland Water and Power are connected at the  
2 distribute voltage level to allow for cost-effective service to PSCo customers. To  
3 maintain the functionality of the electric system, there has to be a clear demarcation of  
4 ownership and maintenance responsibility for every part of the integrated grids. The  
5 City's plan for separation of ownership maintains the integration of Boulder with the  
6 established electrical grid.

7 **Q. IS THE SEPARATION OF OWNERSHIP AT THE PROPOSED ACQUISITION**  
8 **AREA BOUNDARY CONSISTENT WITH GOOD OPERATING PRACTICE**  
9 **AND THE REALITIES OF THE SYSTEM SERVING BOULDER TODAY?**

10 A. Yes, the boundaries of the Acquisition Area appropriately reflect the way the electric load  
11 is concentrated within the buffer created by Boulder's open space acquisitions. By  
12 drawing the boundaries in this manner, rather than along political boundaries or some  
13 other criteria unrelated to the way the system was designed, Boulder Light & Power and  
14 PSCo can be operated efficiently. The interconnections as proposed also allow for  
15 mutual aid between PSCo and Boulder Light & Power during emergency events. The  
16 plan does this by utilizing the existing normally open points. The plan also maintains  
17 reliable electric service to PSCo's customers on the north and west sides of the  
18 Acquisition Area by utilizing newly created normally closed interconnections. If the  
19 boundaries were drawn to separate the load pocket following political boundaries, then  
20 Mr. Ghidossi estimates in his Direct Testimony that as many as 200 additional  
21 interconnection points would need to be created. Creating a large number of additional  
22 interconnections could result in (1) confusion with the operations of both PSCo and the  
23 Boulder Light & Power causing safety hazards for field workers; (2) the unnecessary

1 deployment of equipment creating potential points of failure on the Boulder electric  
2 system which would, in turn, result in lowering reliability to both PSCo's and the City's  
3 customers; (3) unnecessary duplication of facilities adding further safety concerns for the  
4 both utilities' line workers; and (4) would add unnecessary cost. The selected boundaries  
5 minimize, to the extent possible, future conflicts between Boulder Light & Power and  
6 PSCo by creating clear lines of demarcation at easily recognized boundaries between the  
7 two utilities.

8 **Q. PLEASE DESCRIBE WHETHER THE PLANS FOR THE POINTS OF**  
9 **INTERCONNECTION ARE REASONABLE.**

10 A. The description of the equipment and the function of the interconnection points are  
11 common in the industry. It will allow measurement of the performance of each utility,  
12 including the amount and direction of power crossing the points of interconnection.  
13 These interconnection points will allow the utilities to identify which utility is responsible  
14 in the event of an outage and will allow for the safe isolation of faulted equipment. The  
15 equipment configuration, as described, will allow for the isolation of components to  
16 facilitate maintenance and correction by either utility on their respective sides of the  
17 interconnection.

18 **Q. HOW WILL THE PSCO CUSTOMERS BE AFFECTED BY THE SEPARATION**  
19 **AT THE ACQUISITION BOUNDARIES?**

20 A. I would not expect that there would be any effect on the PSCo customers. The reliability  
21 of service delivered to PSCo's customers both outside and inside the Acquisition Area  
22 will be maintained at current levels because the system will be operated the same as it is  
23 today.

1 **Q. IS THERE ANYTHING THAT COULD INTERFERE WITH THE SEAMLESS**  
2 **TRANSITION FROM ONE TO TWO ELECTRIC UTILITIES?**

3 A. The only thing that would interfere with providing an equivalent level of reliability and  
4 customer service would be a lack of appropriate cooperation and coordination between  
5 Boulder Light & Power and PSCo. For instance, if the two utilities did not jointly  
6 develop and follow clear standards and procedures on how to operate the equipment at  
7 the new interconnection points or if there was a decision not to use the equipment at the  
8 normally open interconnection points to provide mutual aid during emergency events.  
9 The sharing of operational information at the boundaries and the close field coordination  
10 between the two utilities will benefit the customers of both utilities and will help provide  
11 a safe work environment for each utility's line workers.

12 **Q. HAVE YOU REVIEWED THE PROPOSED LIST OF ASSETS TO BE**  
13 **TRANSFERRED FROM PSCO TO THE CITY?**

14 A. Yes, I have reviewed and agree with the list of assets and equipment that the City is  
15 proposing to acquire. The list essentially includes all distribution assets within the  
16 Acquisition Area from the distribution riser at the substation to the meter on the  
17 customer's premise. Thus, the proposed transfer will establish Boulder Light & Power as  
18 the single distribution service provider within the Acquisition Area.

19 **Q. WILL PSCO BE ABLE TO CONTINUE TO PROVIDE SERVICE TO ITS**  
20 **CUSTOMERS WITHIN THE ACQUISITION AREA?**

21 A. Yes. Based on my review of the list of assets and my understanding of how Boulder  
22 intends to operate, the list of assets to be transferred includes the assets necessary to serve  
23 the customers of the City's new electric utility, but the transfer also allows for PSCo to

1 continue to serve its customers within the Acquisition Area by wheeling power from the  
2 PSCo system to its customers over the City's facilities. The interconnection points also  
3 provide for PSCo to continue to serve its customers to the west and north of the  
4 Acquisition Area.

5 **Q. COULD THE CITY HAVE DESIGNED THE SEPARATION OF THE SYSTEM**  
6 **TO HAVE SEPARATED AT POINTS OTHER THAN THE BOUNDARY OF THE**  
7 **ACQUISITION AREA?**

8 A. In my opinion, not without affecting cost and reliability. Because the system was  
9 designed and built to serve all properties within the open space buffer, the distribution  
10 assets within the Acquisition Area are co-mingled to such an extent that separating at  
11 points other than the boundary of the Acquisition Area would not allow the system to  
12 continue to function as designed. That would result in increased cost to ratepayers and a  
13 potential reduction in reliability and safety.

14 **Q. WHAT IS YOUR OPINION OF THE CITY'S PLAN TO ACQUIRE THE**  
15 **SERVICE DROPS AND METERS AT THE CUSTOMER PREMISES?**

16 A. Acquiring the service drops and meters will allow Boulder Light & Power to be totally  
17 responsible for outage management and restoration within the Acquisition Area. The  
18 City is also proposing that it gather and provide to PSCo meter reads for those customers.  
19 This has the advantage of one utility being responsible for the maintenance of and  
20 emergency response for all distribution and metering assets within the Acquisition Area,  
21 while simultaneously providing each utility with the necessary customer meter  
22 information for operations, planning, and billing.

1 **Q. IS THE CITY'S PLAN TO ACQUIRE ASSETS AT THE SUBSTATIONS**  
2 **REASONABLE?**

3 A. Yes, the plan is reasonable and based on sound operating practices and principles. I can  
4 offer two observations:

5 First, Mr. Ghidossi, in his Direct Testimony, establishes criteria for the separation  
6 of electric system assets. He makes no distinction between substation and distribution  
7 assets. I concur that the same criteria can be applied to substation assets to develop a  
8 separation plan at each substation feeding the Boulder electric system.

9 Second, I agree with the general approach Mr. Ghidossi took to divide the  
10 equipment at each substation. In my experience, it is very common for utilities to divide  
11 the assets as proposed by Mr. Ghidossi in his Direct Testimony. At substations where  
12 one utility owns the transmission and the another utility owns the distribution, an  
13 ownership change at the high side transformer disconnecting device is common, as is  
14 making that separation of ownership where the distribution-owning utility owns the high  
15 side transformer disconnecting device, the distribution transformer, and all low side  
16 distribution assets. It is also very common that the transmission- and distribution-owning  
17 utilities each have their own control house to house such items as protection and control  
18 equipment and substation batteries.

19 Also, common assets like the substation fence and the substation grounding grid  
20 generally remain the property of one of the utilities rather than attempting some means of  
21 duplicating those facilities or sharing ownership. This is the arrangement that the City  
22 has proposed. I have experience with this arrangement including in the new substation  
23 that was built by the Lower Colorado River Authority to provide transmission service for

1 transformers owned by AE to serve the new Circuit of the America's F-1 racing facility  
2 in Austin, TX. The substation in that arrangement exemplifies the division of ownership  
3 and responsibility that is being proposed at each substation by the City.

V. **BOULDER'S PROPOSED PLAN FOR STARTUP, THE TRANSITION PERIOD,**  
**AND IN ONGOING OPERATIONS**

4 **Q. DID THE CITY ALSO ASK YOU TO REVIEW THE CITY'S PLANS FOR**  
5 **STARTUP, THE TRANSITION PERIOD, AND ONGOING OPERATIONS?**

6 A. Yes, it did.

7 **Q. DOES THE PLAN FOR STARTUP, THE TRANSITION PERIOD AND**  
8 **ONGOING OPERATIONS COVER THE TASKS YOU CONSIDER NECESSARY**  
9 **FOR BOULDER LIGHT & POWER TO ACCOMPLISH?**

10 A. Yes. The plan covers the fundamentals of setting up the operations of a new municipal  
11 electric utility. It covers the following areas:

- 12 1. Legal/Regulatory
- 13 2. Planning & Engineering
- 14 3. Construction, Operations & Maintenance
- 15 4. Power Supply
- 16 5. Customer Service
- 17 6. Energy Services
- 18 7. Finance & Accounting
- 19 8. Support Services

1           In my review, I considered the City's plan for using contracted services and  
2           whether the plan would create a functioning utility that would be financially sound,  
3           deliver the expected level of customer service including meeting reliability expectations,  
4           and create an organization with the resources necessary to deliver all of the functions  
5           needed for an operating electric utility.

6   **Q.   CAN YOU FIRST ADDRESS THE PORTIONS OF THE PLAN THAT CALL**  
7   **FOR THE USE OF CONTRACTED SERVICES, AS OPPOSED TO HAVING**  
8   **ALL UTILITY SERVICES PERFORMED BY IN-HOUSE PERSONNEL?**

9   A.   Yes, certainly. I have experienced both scenarios. The City's plan contemplates a heavy  
10   use of contracted resources, particularly at startup. The use of contracted resources is  
11   common in electric utilities. As an example from my experience, AE utilizes contract  
12   resources for line clearance, to supplement internal staff in the construction of overhead  
13   and underground distribution facilities, for the construction of new substations and  
14   transmission lines, to supplement internal staff in the maintenance of substations and  
15   protective relaying, and to supplement internal staff in the engineering and design of all  
16   types of electrical infrastructure.

17           By utilizing contractors to provide line clearance, AE has the advantage of having  
18   a highly trained contract staff that only focuses on line clearance activities provided at a  
19   price that the utility could not match with internal resources. AE also contracts for  
20   overhead and underground construction contractors to provide staff argumentation for  
21   both clear sky days as well as help with restoration activities. By utilizing contract  
22   resources in this manner, a utility can better balance staff resources thus ensuring that  
23   during periods of high activity skilled contractors are available and during periods of low

1 activity those contractors can be released helping manage costs. This also benefits  
2 internal staff in that a constant internal staffing level can be maintained.

3 The City's plan also contemplates the sharing of support services with other City  
4 Departments. From my experience at Austin Energy, this is also a common practice with  
5 municipal electric utilities. Examples from AE include the sharing of Human Resource,  
6 Purchasing, and Customer Service functions with other Departments of the City of  
7 Austin.

8 The issue is not whether the staff is contracted or employed by the utility as much  
9 as whether qualified personnel will be performing the variety of tasks that are identified  
10 in the plan and needed to safely operate a reliable electric utility with a high level of  
11 quality service. Contracted resources, used appropriately, can cost effectively increase  
12 the delivery capability of internal staff charged with reliability functions and promote the  
13 delivery of reliable electric service to customers.

14 **Q. RETURNING NOW TO THE QUESTION OF WHETHER THE CITY'S PLAN**  
15 **WILL RESULT IN A FULLY FUNCTIONAL MUNICIPAL ELECTRIC**  
16 **UTILITY, WHAT IS YOUR OPINION OF THE CITY'S PLAN?**

17 A. The plan is a good blueprint of the tasks necessary to effect a smooth transition for  
18 customers. Of course, additional in-depth planning will continue to occur throughout the  
19 startup and transition periods. But, based on my review of the current plan, the City will  
20 have a fully-functional electric utility at the commencement of operations if it follows all  
21 of the components of the plan, including the ongoing development of in-depth strategies,  
22 tactical plans, operational metrics, and more detailed sub-plans for each major functional  
23 area.



1 **Q. HAS THE CITY BEGUN TO IMPLEMENT ADDITIONAL IN-DEPTH**  
2 **PLANNING AS YOU RECOMMEND?**

3 A. Yes. In particular, the City has started to develop additional plans in several important  
4 areas including reliability; safety; outage management and restoration; emergency  
5 management; physical and cyber security; resource staffing; and information and  
6 operational technology; and utilization of resources shared with other City Departments.  
7 Mr. Harberg discusses some of these efforts in his Direct Testimony.

8 Further, the City, with assistance from Schneider Electric, is conducting a review  
9 of current City-owned systems to determine which of those systems can be used by the  
10 new electric utility. For example, the City currently has customer information systems,  
11 asset management systems, and geographic information systems that are being evaluated  
12 for use. In addition, the City is conducting a gap analysis to evaluate what other systems  
13 may be needed for the operation of the new electric utility. I believe the work the City is  
14 performing now will ensure the deployment of a comprehensive, well thought out  
15 technology roadmap for the new electric utility.

16 Lastly, one of the important components to operation of an electric utility is  
17 developing an information and operational technology strategy that is completely  
18 separate from other city business for cyber security-related issues, but also connected to  
19 other city services for emergency responses and customer service. The City recognizes  
20 the importance of this component and has begun work on establishing a strategy and  
21 roadmap for to accomplish this task.

1 **Q. HAS THE CITY REALISTICALLY EVALUATED WHAT IS NEEDED TO**  
2 **PROVIDE RELIABLE ELECTRIC SERVICE INSIDE THE CITY AND**  
3 **THROUGH THE INTERCONNECTIONS TO PROVIDE RELIABLE**  
4 **DISTRIBUTION WHEELING SERVICE TO PSCO?**

5 A. Yes, the City has evaluated reliability extensively by analyzing the existing City systems,  
6 getting advice and input from expert consultants, and inviting the public to participate in  
7 the development of the plan. Based on the short biographies attached to Mr. Harberg's  
8 Direct Testimony for the members of the Reliability Working Group that is being used by  
9 the City to evaluate all aspects of reliability, the members of that group bring an  
10 impressive level of expertise to the process. With all of the input received by the City,  
11 the plan sets metrics to meet or exceed existing reliability and requires regular  
12 measurements of various reliability indexes. As the City monitors those measurements  
13 over time, the City will make adjustments to the plan as necessary to continue to provide  
14 safe, reliable, quality service.

15 **Q. ARE THERE OTHER ACTIONS A UTILITY CAN TAKE TO SUPPORT ITS**  
16 **ABILITY TO MAINTAIN RELIABILITY, SAFETY, AND QUALITY OF**  
17 **SERVICE?**

18 A. Yes. For example, I support the City's commitment to hire an experienced electric utility  
19 management team to oversee Boulder Light & Power operations and to appropriately  
20 provide the new utility with staff, equipment, and technology.

21 I also recommend that the City join public power and mutual aid organizations  
22 that include nearby electric utilities. Establishing mutual aid agreements through those  
23 organizations and working directly with nearby utilities is also very important. My

1 understanding is that Boulder has planned to do both. AE belongs to the Texas Mutual  
2 Assistance Group, a voluntary group that consists of Investor Owned and Municipally  
3 Owned Utilities located in the States of Texas, Oklahoma, Louisiana, and Mississippi,  
4 and also belongs to both the American Public Power Association and the Texas Public  
5 Power Association. This Group and these Associations have all arranged for aid from  
6 member utilities to respond to emergencies on other member's systems. AE has  
7 responded to calls for assistance for hurricanes, tornados, and ice storms in Florida,  
8 Alabama, Louisiana, Oklahoma, and Texas. AE also received aid twice in my tenure at  
9 the company. The first time was in response to an ice storm and the second was for a  
10 severe thunderstorm and wind event. In my experience, use of mutual aid agreements is  
11 common in the electric utility industry and works well for the electric utility industry.

12 **Q. ARE THERE OTHER STEPS THAT COULD BE TAKEN TO PROTECT THE**  
13 **PUBLIC INTEREST AND PREVENT ANY HARM TO THE PUBLIC?**

14 A. Yes. While the City's plan addresses all of the things within the City's control to  
15 transition to the City operating the new electric utility, the City is only one side of the  
16 transition. To best protect the public interest, the City and PSCo should cooperate to  
17 flesh out the details of the transition of ownership and operation and closely coordinate  
18 all tasks affecting both, particularly during the transition period. This will enable a  
19 seamless transition which will provide a continuation of equivalent levels of customer  
20 service for customers inside and outside the Acquisition Area. Coordination will be  
21 important in delivering good reliability pre- and post- transition when transferring from  
22 PSCo operating the system within the Acquisition Area to Boulder Light & Power  
23 operating that portion of the system.

1 **Q. COULD YOU GIVE SPECIFIC EXAMPLES OF AN AREA OF COOPERATION**  
2 **THAT WOULD BEST PROTECT THE PUBLIC INTEREST?**

3 A. Yes. The existing Boulder electrical system has been built, operated and maintained by  
4 PSCo over many years. PSCo has established design and construction standards that  
5 detail how the substation and distribution infrastructure has been constructed, operated,  
6 and maintained. PSCo has also generated records and drawings that detail essential  
7 information on the distribution and substation infrastructure that makes up the Boulder  
8 electrical system. Those documents, and data generated, are the foundational standards,  
9 specifications, plans, and records that underpin the operation of the electric system PSCo  
10 has successfully operated. If PSCo would provide those documents and data to the City,  
11 it would help ensure the smooth transition and operational success of the new utility for  
12 the benefit of the public. While Boulder Light & Power can become operational without  
13 this information, withholding this information could harm customers and would not make  
14 sense. Examples of potential negative consequences that could be caused by withholding  
15 these foundational documents from the City include:

16 (a) Without the geographical information system data for the Boulder electrical  
17 system, the new utility's responsiveness to problems on its system will be unnecessarily  
18 sluggish. Boulder Light & Power will have to almost blindly respond to outage calls  
19 from its customers. This could lead to degradation in reliability and increase the  
20 likelihood of having a serious safety incident in the field. It will also increase costs for  
21 Boulder Light & Power because this information is so critical to operations that the new  
22 utility will be forced immediately into a project to capture and recreate this data.

1 (b) Without the historical equipment maintenance and performance records,  
2 Boulder Light & Power will be operating blindly and will be prevented from effectively  
3 performing even the most basic asset and maintenance management activities until a  
4 complete equipment survey is conducted and a new baseline is established. This will  
5 adversely impact both reliability throughout the grid and the cost effectiveness of the  
6 utility.

7 (c) Without having access to the design and construction standards with which the  
8 Boulder electric system was constructed, those standards will need to be recreated,  
9 negatively impacting customer service, delay pending and future development, and  
10 reduce the cost effectiveness of the utility.

11 **Q. COULD YOU PROVIDE A LIST OF THE TYPES OF DOCUMENTS AND DATA**  
12 **IN PSCO'S POSSESSION THAT, IF SHARED WITH BOULDER, WOULD HELP**  
13 **ENSURE A SEAMLESS TRANSITION FOR BOTH PSCO'S AND THE CITY'S**  
14 **CUSTOMERS?**

15 A. Yes. The documents and data fall within several categories that serve either as a record  
16 of the Boulder electrical system and installed equipment or as ruling standards,  
17 specifications, procedures, and processes of the Boulder electrical system. Not only do  
18 current records need to be transferred as part of the acquisition, but historical records  
19 should also be transferred. The time periods required may be from as recent as three  
20 years to records that may be thirty years or older. These categories include, but are not  
21 limited to, the following:

- 22 • Substation and distribution asset information;
- 23 • Engineering and planning processes, procedures, records, and data;

- 1           • Substation and distribution equipment and material standards, specifications, records  
2           and data;
- 3           • Substation and distribution system construction, maintenance, and operations  
4           standards, specifications, records and data;
- 5           • Substation and distribution system as-built drawings;
- 6           • Work management processes, records, and data;
- 7           • Easement and property records; and
- 8           • Customer records and data.

9   **Q.   IS THERE ANY REASON THESE DOCUMENTS SHOULD NOT BE PROVIDED**  
10 **BY PSCO TO THE CITY?**

11 A.   Not to my knowledge. Any portions of the information that included identifying  
12 information of customers or critical electric infrastructure information would have to  
13 remain protected by the City in compliance with applicable law. However, customers of  
14 both utilities and the public in general would be better off if PSCo shared this information  
15 with City and worked with the City to provide a transition that is both seamless for  
16 customers and carefully managed to protect employee safety and system reliability.

## VI.   SUMMARY OF POSITION

17 **Q.   COULD YOU PLEASE BRIEFLY SUMMARIZE YOUR TESTIMONY?**

18 A.   The City asked me to review the plan for separation of ownership prepared by Boulder  
19 witness Mr. Ghidossi, P.E., and the plans for operating Boulder Light & Power during  
20 startup, the transition period, and in ongoing operations as described in the Direct

1 Testimony of Mr. Robert Harberg. Based on my experience and analysis in this  
2 proceeding, I have reached the following conclusions:

3 (1) The criteria developed by Mr. Ghidossi to design the separation plan and  
4 create the Acquisition Area are consistent with the requirements laid out by the City and  
5 with sound electric utility operating practices and principles.

6 (2) The plan provides for clear lines of demarcation between the two utilities  
7 making it (a) simpler to remotely monitor the equipment at each interconnection point at  
8 each utility's control center and that, in turn, facilitates the quick, efficient dispatch of the  
9 responsible utility's line personnel to respond to trouble on their respective system, (b)  
10 safer for utility line workers, and (c) possible to maintain operation of the system as it  
11 was designed and how it is operated today.

12 (3) By minimizing the number of interconnection points and eliminating duplicate  
13 facilities, both Boulder and PSCo will be able to operate their portions of the system  
14 without unnecessary safety concerns for their line personnel.

15 (4) The plan, if implemented as proposed, would maintain the reliability of  
16 service at current levels for power delivered to the City's customers, as well as PSCo's  
17 customers both outside and inside the Acquisition Area because the system will be  
18 operated the same as it is today.

19 (5) Based on my review of the list of assets proposed to be transferred from PSCo  
20 to the City and my understanding of how Boulder intends to operate, the list of assets to  
21 be transferred includes the assets necessary to serve Boulder Light & Power customers.  
22 Further, if those assets are transferred, Boulder Light & Power will be able to operate as  
23 the single distribution service provider within the Acquisition Area.

1           (6) Specifically with regard to the assets to be transferred at the substations, I  
2           concur with Mr. Ghidossi that the same criteria can be applied to both distribution and  
3           substation assets to develop a plan for separation of ownership at each substation feeding  
4           the Boulder electric system. I further agree with the general approach Mr. Ghidossi took  
5           to divide the equipment at each substation.

6           (7) The plans described by Mr. Harberg for operating the utility during startup,  
7           the transition period, and in ongoing operations are well thought-out and utilize good  
8           utility operating practice for the benefit of all customers who will be served by the  
9           system.

10          (8) The plan, if implemented, can create a functioning utility that will be  
11          financially sound, deliver the expected level of customer service including meeting  
12          reliability expectations, and create an organization with the resources necessary to deliver  
13          all of the functions needed by customers.

14          (9) Contracted resources, used appropriately, can increase the delivery capability  
15          of internal staff charged with reliability functions and promote the delivery of reliable  
16          electric service to customers. The City's plan to use a combination of contracted  
17          resources and in-house personnel to implement its plan is reasonable.

18          (10) The City has started to develop additional in-depth plans in several important  
19          areas including reliability; safety; outage management and restoration; emergency  
20          management; physical and cyber security; resource staffing; and information and  
21          operational technology; and utilization of resources shared with other City Departments.



1           (11) The City has evaluated reliability issues extensively and appropriately by  
2 analyzing the existing City systems, getting advice and input from expert consultants, and  
3 inviting the public to participate in the development of the plan.

4           (12) Finally, the City recognizes that this process will work better for customers  
5 and the public generally if the City and PSCo work collaboratively and share information.  
6 In my judgment, it is critical that PSCo share information with City and work with the  
7 City to provide a transition that is both seamless for customers and carefully managed to  
8 protect employee safety and system reliability.

9 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

10 A. Yes, thank you.

## STATEMENT OF QUALIFICATIONS

### David L. Wood, P.E.

An electrical engineer with nearly 30 years experience in the electric utility industry, David L. Wood is a Director for Utility Consulting Services with Schneider Electric in Austin, Texas. Mr. Wood joined Schneider Electric in August 2014 to help build this new startup business, which is central to the build out of two primary growth areas within Schneider Electric: the Utility Segment and the Services Business. The main areas of responsibilities of this position include sales and business development; project delivery and technical leadership; and strategy development and implementation of utility consulting services. Thought leadership in Electric Utility Space in Electric Utility Strategy Development; Technology Strategy and Roadmap Development; Distributed Energy Resource Planning; and Microgrid Impact Planning are key areas of concentration. This new business is tasked with becoming a trusted advisor to the electric utility community on new business models associated with the on-going development of the “Smart Utility.”

Before joining Schneider Electric, Mr. Wood was employed by the City of Austin Electric Utility Department in Austin, Texas, later known as Austin Energy or AE, for 22 years. He joined the City of Austin in 1992 as a substation engineer and was quickly promoted. His career path at AE is impressive: Supervisor, Engineering Support (10/95 to 12/96); Supervisor, Power Delivery Engineering (1/97 to 1/98); Supervisor for Transmission Project Engineering (1/98 to 11/98); Process Manager of Planning, Regulatory Engineering, and System Engineering(11/98 to 7/00); Director, Transmission and Distribution (7/00 to 11/02); Director, Transmission and Substation Construction and Maintenance (11/02 to 11/04); Director, System Operations and Reliability (11/04 to 3/10); Interim Senior Vice-President of Power Supply and

Market Operations (9/12 to 6/13); Vice President, Electric Service Delivery (ESD) (3/10 to 6/13); and finally Sr. Vice President, Electric Service Delivery (ESD) (6/13 to 5/14).

As one of only two Senior Vice Presidents at Austin Energy, Mr. Wood was the executive responsible for engineering, design, construction, maintenance, and operation of Austin Energy's (AE's) Transmission, Substation, and Distribution Infrastructure. This business unit has a 540 person staff and yearly budget responsibilities for a \$100 Million CIP budget and a \$62 Million O&M budget. Other major accomplishments during his tenure at AE include: leading the effort to define strategic and tactical plans to implement the Smart Utility Program in ESD and working with other AE Executives to define the Smart Utility Vision across AE; acting as the executive sponsor for various Smart Utility Programs and Initiatives including the deployment of an Advanced Distribution Management System, the deployment of a Meter Data Management System, and the upgrade and conversion of AE's Automated Meter Reading System to an Advanced Metering Infrastructure System; and leading ESD in the effort to become ISO 9001:2008 certified to improve process standardization and system reliability.

Mr. Wood holds a Bachelor of Science degree in Electrical Engineering, with an emphasis in Power and Control Systems from Mississippi State University in Starkville, Mississippi and has participated in numerous professional education courses, including the Utility Executive Course, University of Idaho; ISO 9001:2000 Internal Auditor Training Program, EuroQuest; Advanced Leadership Program, Austin Energy; Process Mapping, University of Texas; Distributed Generation Short Course, ABB; Power System Grounding, Safe Engineering Services; Machine Vibration Data Acquisition, Bentley Nevada; Overvoltage and Insulation Coordination Course, PTI; Modeling and Analysis of Modern Power Systems, University of Texas at Arlington; Station Insulation Coordination Seminar, Westinghouse; and

various supervisory, technical, and personal development courses and conferences with TU Electric and the City of Austin.

Mr. Wood is a licensed Texas Professional Engineer; P.E. License Number: 77262.