

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Integration of Variable Energy Resources

)

Docket No. RM10-11-000

**COMMENTS OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY**

Lisa Jacobson  
President  
Business Council for Sustainable Energy  
1620 Eye Street NW, Suite 501  
Washington, DC 20006  
Tel: (202) 785-0507  
Fax: (202) 785-0514  
Email: [ljacobson@bcse.org](mailto:ljacobson@bcse.org)  
[www.bcse.org](http://www.bcse.org)

Date: March 2, 2011

Christopher T. Ellison  
Brian S. Biering  
2600 Capitol Avenue, Suite 400  
Sacramento, CA 95816-5905  
Tel: (916) 447-2166  
Fax: (916) 447-3512  
Email: [cte@eslawfirm.com](mailto:cte@eslawfirm.com)  
[bsb@eslawfirm.com](mailto:bsb@eslawfirm.com)

Attorneys for the Business Council for  
Sustainable Energy

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

Integration of Variable Energy Resources )

Docket No. RM10-11-000

**COMMENTS OF THE BUSINESS COUNCIL FOR SUSTAINABLE ENERGY**

The Business Council for Sustainable Energy (“BCSE” or “coalition”) respectfully submits the following comments in response to the Federal Energy Regulatory Commission’s (“Commission” or “FERC”) November 18, 2010 Notice of Proposed Rulemaking on Integration of Variable Energy Resources (“NOPR”).

**I. INTRODUCTION AND SUMMARY**

BCSE is a coalition of companies and trade associations from the energy efficiency, natural gas and renewable energy sectors, and also includes independent electric power producers, investor-owned utilities, public power, commercial end-users and environmental market service companies. BCSE was founded in 1992, and advocates for policies at state, national and international levels that increase the use of commercially-available clean energy technologies, products and services. The coalition’s diverse business membership is united around the revitalization of our economy and creation of a secure and sustainable energy future for America.<sup>1</sup> However, because BCSE is a diverse coalition, not all members endorse or take positions on the issues included in these comments.

As discussed below, BCSE supports the NOPR and FERC’s efforts to remove barriers to integration of variable energy resources (“VERs”). BCSE strongly supports FERC’s efforts to

---

<sup>1</sup> More information about BCSE is available at: [www.bcse.org](http://www.bcse.org)

ensure that generators are not unduly discriminated against. To this end, BCSE urges FERC to expand mechanisms for flexible resources to provide balancing services to grid operators and ensure that those services are appropriately valued. These and other comments are detailed below.

BCSE also requests that service in this proceeding be made upon, and communications directed to:

Lisa Jacobson  
President  
Business Council for Sustainable Energy  
1620 Eye Street NW, Suite 501  
Washington, DC 20006  
Tel: (202) 785-0507  
Fax: (202) 785-0514  
Email: [ljacobson@bcse.org](mailto:ljacobson@bcse.org)  
[www.bcse.org](http://www.bcse.org)

Christopher T. Ellison  
Brian S. Biering  
2600 Capitol Avenue, Suite 400  
Sacramento, CA 95816-5905  
Tel: (916) 447-2166  
Fax: (916) 447-3512  
Email: [cte@eslawfirm.com](mailto:cte@eslawfirm.com)  
[bsb@eslawfirm.com](mailto:bsb@eslawfirm.com)

Attorneys for the Business Council for  
Sustainable Energy

## II. DISCUSSION

### 1. **Together, Renewable Energy, Natural Gas Generation, Demand Side Resources and Energy Storage Can Provide Clean, Reliable Power—If FERC Modifies Tariffs To Allow This Partnership To Occur.**

Natural gas generators, demand side resources, energy storage and renewable energy sources fit well together on the grid. Natural gas generators provide capacity, energy, and ancillary services. Demand side resources provide capacity and ancillary services. Energy storage can provide ancillary services and energy. Renewable resources provide mostly energy and a small amount of capacity and ancillary services. Together, these resources can provide the full complement of energy, capacity, and ancillary services needed for a reliable grid.

Currently, in many parts of the country, natural gas generators and other flexible resources sit available to provide balancing services (ramping up and down in response to system excess/shortage of power), but with no means to do so. As more variable resources are integrated, system balancing demands rise.

The Open Access Transmission Tariff should be revised to ensure that the flexible resources are better able to provide their services to system operators who integrate VERs and that these services are properly valued. Flexible generation resources such as natural gas-fired generators and pumped storage hydro generators should be given more opportunities to sell their balancing services to Transmission Providers and should be paid a just and reasonable rate for these services. Moreover, if FERC adopts a universal requirement for fifteen minute scheduling (discussed further below), it should make clear that generators should be able to supply balancing services on the same fifteen minute (or less) basis. While such a mechanism already exists in most RTO/ISO markets, it is important that it be implemented in all markets and especially those with significant penetration of variable resources. The shorter the time frame that Transmission Providers settle these transactions, the more reliable the grid will be and the more renewable and flexible energy will be able to be integrated. The NOPR should be bolstered beyond the three proposals to include more provisions listed above, which would better account for the balancing services provided by flexible resources.

## **2. FERC Should Clarify Its Proposal For Recovery of Reserve Service Costs**

The NOPR provides for a rate schedule that allows a public utility transmission provider “the opportunity to recover reserve service costs associated with the management of supply side variability.”<sup>2</sup> BCSE supports appropriate payment mechanisms and rates for balancing services

---

<sup>2</sup> NOPR at p. 18.

including market-based rates as long as efficient mechanisms exist for the procurement of those services. In considering back up generation, all upstream services should be considered in the dialogue.

**3. FERC Should Focus On Improving VER Integration In Markets That Do Not Include Rapid Spot Energy and Ancillary Service Markets.**

In general, rapid spot energy and ancillary service markets (as in most RTO/ISOs) are the most suitable mechanisms for efficient short-term balancing products to be bought and sold. FERC should focus on areas where rapid spot energy and ancillary service markets do not exist, particularly non-RTO/ISO areas that are experiencing significant renewable energy penetration. However, we believe that RTO and ISO ancillary service markets should continue to evolve in response to market needs.

**4. Faster Dispatch and Scheduling Improves Balancing.**

A shorter time frame for energy and ancillary service settlement facilitates electricity reliability as renewable energy increasingly penetrates the market. BCSE members do not all agree on the exact time frame or whether there should be a single time frame across all regions for the balancing services market. For example, there are ongoing pilots in the WECC power market helping to inform this debate, and some members believe FERC should utilize the results of these pilots to inform scheduling policies. In addition, FERC should consider holding a technical workshop to consider the issue.

**III. CONCLUSION**

BCSE supports the NOPR and believes that FERC's efforts to remove barriers to integration of VERs, should also ensure that generators are not unduly discriminated against. As described

above, BCSE urges FERC to expand the mechanisms for flexible resources to provide balancing services to grid operators and ensure that those services are appropriately valued. BCSE appreciates the opportunity to provide these comments.

Date: March 2, 2011

Respectfully submitted,

  
/s/ \_\_\_\_\_

Lisa Jacobson  
President  
Business Council for Sustainable Energy  
1620 Eye Street NW, Suite 501  
Washington, DC 20006  
Tel: (202) 785-0507  
Fax: (202) 785-0514  
Email: [ljacobson@bcse.org](mailto:ljacobson@bcse.org)  
[www.bcse.org](http://www.bcse.org)

  
/s/ \_\_\_\_\_

Christopher T. Ellison  
Brian S. Biering  
2600 Capitol Avenue, Suite 400  
Sacramento, CA 95816-5905  
Tel: (916) 447 – 2166  
Fax: (916) 447 – 3512  
Email: [cte@eslawfirm.com](mailto:cte@eslawfirm.com)  
[bsb@eslawfirm.com](mailto:bsb@eslawfirm.com)

Attorneys For Business Council  
for Sustainable Energy

**CERTIFICATE OF SERVICE**

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list of RM10-11-000 in this proceeding and in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Sacramento, California, this 2<sup>nd</sup> day of March 2011.

  
\_\_\_\_\_  
Deric J. Wittenborn

**RM10-11-000**  
**Service List**  
**March 2, 2011**

[bslee8@q.com](mailto:bslee8@q.com)  
[brent.smith@symbioticsenergy.com](mailto:brent.smith@symbioticsenergy.com)  
[david\\_drexler@dps.state.ny.us](mailto:david_drexler@dps.state.ny.us)  
[MbeLively@aol.com](mailto:MbeLively@aol.com)  
[ed@cazalet.com](mailto:ed@cazalet.com)  
[cmee@water.ca.gov](mailto:cmee@water.ca.gov)  
[ejgrammer@GKRSE-law.com](mailto:ejgrammer@GKRSE-law.com)  
[lackley@water.ca.gov](mailto:lackley@water.ca.gov)  
[pckissel@gkrse-law.com](mailto:pckissel@gkrse-law.com)  
[pbernard@water.ca.gov](mailto:pbernard@water.ca.gov)  
[deborah.barnes@doj.ca.gov](mailto:deborah.barnes@doj.ca.gov)  
[crothers@water.ca.gov](mailto:crothers@water.ca.gov)  
[llinowes@windaction.org](mailto:llinowes@windaction.org)  
[sharon.helms@comprehensivepower.org](mailto:sharon.helms@comprehensivepower.org)  
[reinhold@ctcweb.net](mailto:reinhold@ctcweb.net)  
[jlowell@morganlewis.com](mailto:jlowell@morganlewis.com)  
[sspina@morganlewis.com](mailto:sspina@morganlewis.com)  
[reinhold@ctcweb.net](mailto:reinhold@ctcweb.net)  
[jseesel@ftc.gov](mailto:jseesel@ftc.gov)  
[bill.williams@altresco.com](mailto:bill.williams@altresco.com)  
[suzymcbride@gmail.com](mailto:suzymcbride@gmail.com)  
[lindy.fisker@aps.com](mailto:lindy.fisker@aps.com)  
[michael.andrea@avistacorp.com](mailto:michael.andrea@avistacorp.com)  
[bhindin@eei.org](mailto:bhindin@eei.org)  
[eric.schubert@bp.com](mailto:eric.schubert@bp.com)  
[casey.mcfaden@bp.com](mailto:casey.mcfaden@bp.com)  
[Brent.Ingebrigtsen@lge-ku.com](mailto:Brent.Ingebrigtsen@lge-ku.com)  
[mike.beer@lge-ku.com](mailto:mike.beer@lge-ku.com)  
[Robert.Tallman@eon-us.com](mailto:Robert.Tallman@eon-us.com)  
[asoto@aga.org](mailto:asoto@aga.org)  
[kzadlo@invenergyllc.com](mailto:kzadlo@invenergyllc.com)  
[wborders@invenergyllc.com](mailto:wborders@invenergyllc.com)  
[msoutter@invenergyllc.com](mailto:msoutter@invenergyllc.com)  
[mrc@dwgp.com](mailto:mrc@dwgp.com)  
[lsg@dwgp.com](mailto:lsg@dwgp.com)  
[msr\\_general.manager@gmail.com](mailto:msr_general.manager@gmail.com)  
[pjs@dwgp.com](mailto:pjs@dwgp.com)  
[jluner@entergy.com](mailto:jluner@entergy.com)  
[aweinst@entergy.com](mailto:aweinst@entergy.com)  
[amosher@appanet.org](mailto:amosher@appanet.org)  
[skelly@publicpower.org](mailto:skelly@publicpower.org)  
[nmitchell@appanet.org](mailto:nmitchell@appanet.org)

[shieldsm@dteenergy.com](mailto:shieldsm@dteenergy.com)  
[drummb@dteenergy.com](mailto:drummb@dteenergy.com)  
[marty.bregman@westarenergy.com](mailto:marty.bregman@westarenergy.com)  
[michael.lennen@westarenergy.com](mailto:michael.lennen@westarenergy.com)  
[marty.bregman@westarenergy.com](mailto:marty.bregman@westarenergy.com)  
[NancyB@epsa.org](mailto:NancyB@epsa.org)  
[katzas@nu.com](mailto:katzas@nu.com)  
[jhughes@elcon.org](mailto:jhughes@elcon.org)  
[rbidstrup@cgsh.com](mailto:rbidstrup@cgsh.com)  
[rbidstrup@cgsh.com](mailto:rbidstrup@cgsh.com)  
[MbeLively@aol.com](mailto:MbeLively@aol.com)  
[chill@ngsa.org](mailto:chill@ngsa.org)  
[pjagtiani@ngsa.org](mailto:pjagtiani@ngsa.org)  
[pkmatt@brudergentile.com](mailto:pkmatt@brudergentile.com)  
[degoroff@brudergentile.com](mailto:degoroff@brudergentile.com)  
[sbeeney@mbolaw.com](mailto:sbeeney@mbolaw.com)  
[Rich.meyer@nreca.coop](mailto:Rich.meyer@nreca.coop)  
[pkimmel@mbolaw.com](mailto:pkimmel@mbolaw.com)  
[jellis@resero.com](mailto:jellis@resero.com)  
[douglass@energyattorney.com](mailto:douglass@energyattorney.com)  
[nmurray@naturener.net](mailto:nmurray@naturener.net)  
[lawferccases@pge.com](mailto:lawferccases@pge.com)  
[crmd@pge.com](mailto:crmd@pge.com)  
[temiller@bpa.gov](mailto:temiller@bpa.gov)  
[steven.naumann@exeloncorp.com](mailto:steven.naumann@exeloncorp.com)  
[karen.hill@exeloncorp.com](mailto:karen.hill@exeloncorp.com)  
[Michael.Regulinski@Dom.com](mailto:Michael.Regulinski@Dom.com)  
[suzanne@chelanpud.org](mailto:suzanne@chelanpud.org)  
[Mohammed.Beshir@ladwp.com](mailto:Mohammed.Beshir@ladwp.com)  
[Randy.Howard@ladwp.com](mailto:Randy.Howard@ladwp.com)  
[david.cook@nerc.net](mailto:david.cook@nerc.net)  
[Holly.Hawkins@nerc.net](mailto:Holly.Hawkins@nerc.net)  
[peter.christensen@pnl.gov](mailto:peter.christensen@pnl.gov)  
[peter.christensen@pnl.gov](mailto:peter.christensen@pnl.gov)  
[ross.guttromson@pnl.gov](mailto:ross.guttromson@pnl.gov)  
[will.shaw@pnl.gov](mailto:will.shaw@pnl.gov)  
[glazec@pjm.com](mailto:glazec@pjm.com)  
[pincus@pjm.com](mailto:pincus@pjm.com)  
[PSzymanski@semprautilities.com](mailto:PSzymanski@semprautilities.com)  
[bblair@thompsoncoburn.com](mailto:bblair@thompsoncoburn.com)  
[rdr@sloverandloftus.com](mailto:rdr@sloverandloftus.com)  
[rdr@sloverandloftus.com](mailto:rdr@sloverandloftus.com)  
[ahaubenstock@brightsourceenergy.com](mailto:ahaubenstock@brightsourceenergy.com)

[william.huang@spiegelmc.com](mailto:william.huang@spiegelmc.com)  
[cynthia.bogorad@spiegelmc.com](mailto:cynthia.bogorad@spiegelmc.com)  
[robert.mcdiarmid@spiegelmc.com](mailto:robert.mcdiarmid@spiegelmc.com)  
[rthilly@wppienergy.org](mailto:rthilly@wppienergy.org)  
[eService@spiegelmc.com](mailto:eService@spiegelmc.com)  
[kpatton@cleanlineenergy.com](mailto:kpatton@cleanlineenergy.com)  
[matt@hydro.org](mailto:matt@hydro.org)  
[linda@hydro.org](mailto:linda@hydro.org)  
[jeff@hydro.org](mailto:jeff@hydro.org)  
[gwung@nvenergy.com](mailto:gwung@nvenergy.com)  
[daniel.frank@sutherland.com](mailto:daniel.frank@sutherland.com)  
[edwin.kichline@us.ngrid.com](mailto:edwin.kichline@us.ngrid.com)  
[lau@cpuc.ca.gov](mailto:lau@cpuc.ca.gov)  
[HeatherHunt@nescoe.com](mailto:HeatherHunt@nescoe.com)  
[terri.k.eaton@xcelenergy.com](mailto:terri.k.eaton@xcelenergy.com)  
[Bill.Dudley@xcelenergy.com](mailto:Bill.Dudley@xcelenergy.com)  
[STEPHEN.J.BEUNING@XCELENERGY.COM](mailto:STEPHEN.J.BEUNING@XCELENERGY.COM)  
[jpbenchek@firstenergycorp.com](mailto:jpbenchek@firstenergycorp.com)  
[ajuterbock@firstenergycorp.com](mailto:ajuterbock@firstenergycorp.com)  
[dzosa@stinson.com](mailto:dzosa@stinson.com)  
[Steven.Huhman@morganstanley.com](mailto:Steven.Huhman@morganstanley.com)  
[catherine.krupka@sutherland.com](mailto:catherine.krupka@sutherland.com)  
[gortman@stinson.com](mailto:gortman@stinson.com)  
[hreiter@stinson.com](mailto:hreiter@stinson.com)  
[rlunt@naruc.org](mailto:rlunt@naruc.org)  
[daniel.allegretti@constellation.com](mailto:daniel.allegretti@constellation.com)  
[divesh.gupta@constellation.com](mailto:divesh.gupta@constellation.com)  
[daniel.allegretti@constellation.com](mailto:daniel.allegretti@constellation.com)  
[divesh.gupta@constellation.com](mailto:divesh.gupta@constellation.com)  
[denise.saunders@pgn.com](mailto:denise.saunders@pgn.com)  
[nbaker@ppcpdx.org](mailto:nbaker@ppcpdx.org)  
[ekrunge@daypitney.com](mailto:ekrunge@daypitney.com)  
[kelly.barr@srpnet.com](mailto:kelly.barr@srpnet.com)  
[Margaret.Rostker@srpnet.com](mailto:Margaret.Rostker@srpnet.com)  
[james.gainer@hotmail.com](mailto:james.gainer@hotmail.com)  
[sheri.may@duke-energy.com](mailto:sheri.may@duke-energy.com)  
[sjkeene@iid.com](mailto:sjkeene@iid.com)  
[dswanstrom@pattonboggs.com](mailto:dswanstrom@pattonboggs.com)  
[lwhite@pattonboggs.com](mailto:lwhite@pattonboggs.com)  
[mark.kalpin@wilmerhale.com](mailto:mark.kalpin@wilmerhale.com)  
[bgrabow@lockelord.com](mailto:bgrabow@lockelord.com)  
[kgensler@seia.org](mailto:kgensler@seia.org)  
[kmfox@aep.com](mailto:kmfox@aep.com)  
[mrowtham-kennedy@aep.com](mailto:mrowtham-kennedy@aep.com)  
[mrc@dwgp.com](mailto:mrc@dwgp.com)

[mrp@dwgp.com](mailto:mrp@dwgp.com)  
[smatchim@navigantconsulting.com](mailto:smatchim@navigantconsulting.com)  
[bkm@dwgp.com](mailto:bkm@dwgp.com)  
[jtg@dwgp.com](mailto:jtg@dwgp.com)  
[pjleighton@midamerican.com](mailto:pjleighton@midamerican.com)  
[mary.wiencke@pacificorp.com](mailto:mary.wiencke@pacificorp.com)  
[gsu@kslaw.com](mailto:gsu@kslaw.com)  
[dtewksbury@kslaw.com](mailto:dtewksbury@kslaw.com)  
[dzosa@stinson.com](mailto:dzosa@stinson.com)  
[vercheaks@coned.com](mailto:vercheaks@coned.com)  
[ddankner@winston.com](mailto:ddankner@winston.com)  
[rwuslich@winston.com](mailto:rwuslich@winston.com)  
[dpy@vnf.com](mailto:dpy@vnf.com)  
[jbn@vnf.com](mailto:jbn@vnf.com)  
[carlos.gutierrez@nypa.gov](mailto:carlos.gutierrez@nypa.gov)  
[vercheaks@coned.com](mailto:vercheaks@coned.com)  
[pgioia@dl.com](mailto:pgioia@dl.com)  
[efarrah@dl.com](mailto:efarrah@dl.com)  
[njjohnston@dl.com](mailto:njjohnston@dl.com)  
[catherine.mccarthy@dl.com](mailto:catherine.mccarthy@dl.com)  
[mrc@dwgp.com](mailto:mrc@dwgp.com)  
[smn@dwgp.com](mailto:smn@dwgp.com)  
[rogerv@mid.org](mailto:rogerv@mid.org)  
[dad@dwgp.com](mailto:dad@dwgp.com)  
[Lindaf@mid.org](mailto:Lindaf@mid.org)  
[dallen@nyiso.com](mailto:dallen@nyiso.com)  
[jzimerlin@nyiso.com](mailto:jzimerlin@nyiso.com)  
[mlkessler@duanemorris.com](mailto:mlkessler@duanemorris.com)  
[ailer@midwestiso.org](mailto:ailer@midwestiso.org)  
[Marji.Philips@PSEG.com](mailto:Marji.Philips@PSEG.com)  
[Tamara.Linde@PSEG.com](mailto:Tamara.Linde@PSEG.com)  
[Alexander.Stern@PSEG.com](mailto:Alexander.Stern@PSEG.com)  
[Tamara.Linde@PSEG.com](mailto:Tamara.Linde@PSEG.com)  
[Alexander.Stern@PSEG.com](mailto:Alexander.Stern@PSEG.com)  
[Paul.Napoli@PSEG.com](mailto:Paul.Napoli@PSEG.com)  
[Tamara.Linde@PSEG.com](mailto:Tamara.Linde@PSEG.com)  
[Alexander.Stern@PSEG.com](mailto:Alexander.Stern@PSEG.com)  
[atunnell@balch.com](mailto:atunnell@balch.com)  
[karen.mcdonald@powerex.com](mailto:karen.mcdonald@powerex.com)  
[paul.fox@bracewellgiuliani.com](mailto:paul.fox@bracewellgiuliani.com)  
[tracey.bradley@bgllp.com](mailto:tracey.bradley@bgllp.com)  
[AMcKenna@caiso.com](mailto:AMcKenna@caiso.com)  
[berman@wrightlaw.com](mailto:berman@wrightlaw.com)  
[reed@wrightlaw.com](mailto:reed@wrightlaw.com)  
[nrader@calwea.org](mailto:nrader@calwea.org)  
[gunnar\\_birgisson@nexteraenergy.com](mailto:gunnar_birgisson@nexteraenergy.com)

[daniel.whyte@brookfieldpower.com](mailto:daniel.whyte@brookfieldpower.com)  
[lara.skidmore@troutmansanders.com](mailto:lara.skidmore@troutmansanders.com)  
[svideto@ittransco.com](mailto:svideto@ittransco.com)  
[lstuntz@sdsatty.com](mailto:lstuntz@sdsatty.com)  
[FERCCASEADMIN@SCE.COM](mailto:FERCCASEADMIN@SCE.COM)  
[Anna.Valdberg@sce.com](mailto:Anna.Valdberg@sce.com)  
[tblack@igc.org](mailto:tblack@igc.org)  
[hstarnes@spp.org](mailto:hstarnes@spp.org)  
[lnickell@spp.org](mailto:lnickell@spp.org)  
[tparadise@iso-ne.com](mailto:tparadise@iso-ne.com)  
[mgonzalez@iso-ne.com](mailto:mgonzalez@iso-ne.com)  
[ggrace@awea.org](mailto:ggrace@awea.org)  
[braun@braunlegal.com](mailto:braun@braunlegal.com)  
[lehfeldtr@dicksteinshapiro.com](mailto:lehfeldtr@dicksteinshapiro.com)  
[echristensen@gth-law.com](mailto:echristensen@gth-law.com)  
[bassa@calpine.com](mailto:bassa@calpine.com)  
[snovosel@calpine.com](mailto:snovosel@calpine.com)  
[jrs@duncanallen.com](mailto:jrs@duncanallen.com)  
[tmetcalf@cityoftacoma.org](mailto:tmetcalf@cityoftacoma.org)  
[jrs@duncanallen.com](mailto:jrs@duncanallen.com)  
[pmuse@brownrudnick.com](mailto:pmuse@brownrudnick.com)  
[rkahn@nippc.org](mailto:rkahn@nippc.org)  
[vcushing@cleanurbanenergy.com](mailto:vcushing@cleanurbanenergy.com)  
[knordt@gcpud.org](mailto:knordt@gcpud.org)  
[erik.ela@nrel.gov](mailto:erik.ela@nrel.gov)  
[michael.milligan@nrel.gov](mailto:michael.milligan@nrel.gov)  
[lynn\\_coles@nrel.gov](mailto:lynn_coles@nrel.gov)  
[kirbybj@ieee.org](mailto:kirbybj@ieee.org)  
[daking@semprageneration.com](mailto:daking@semprageneration.com)  
[abotterud@anl.gov](mailto:abotterud@anl.gov)  
[dave@daveolsen.net](mailto:dave@daveolsen.net)  
[dallen@nyiso.com](mailto:dallen@nyiso.com)  
[aschindler@nisource.com](mailto:aschindler@nisource.com)  
[mcalcara@sunflower.net](mailto:mcalcara@sunflower.net)  
[beth.emery@huschblackwell.com](mailto:beth.emery@huschblackwell.com)  
[dgarlish@idahopower.com](mailto:dgarlish@idahopower.com)  
[Melinda.Marquis@noaa.gov](mailto:Melinda.Marquis@noaa.gov)  
[james.m.wilczak@noaa.gov](mailto:james.m.wilczak@noaa.gov)  
[Michael.Cashell@northwestern.com](mailto:Michael.Cashell@northwestern.com)  
[thomas.j.knapp@gmail.com](mailto:thomas.j.knapp@gmail.com)  
[jbutler@pnm.com](mailto:jbutler@pnm.com)  
[strauch1@gmail.com](mailto:strauch1@gmail.com)  
[pcalic@hydro.mb.ca](mailto:pcalic@hydro.mb.ca)  
[mcm@vnf.com](mailto:mcm@vnf.com)  
[rob@fitcoalition.com](mailto:rob@fitcoalition.com)  
[eric.hsieh@nema.org](mailto:eric.hsieh@nema.org)

[jnewc@verinet.com](mailto:jnewc@verinet.com)  
[swolfe@viridityenergy.com](mailto:swolfe@viridityenergy.com)  
[afreifeld@viridityenergy.com](mailto:afreifeld@viridityenergy.com)  
[bill.williams@altresco.com](mailto:bill.williams@altresco.com)  
[ssahling@les.com](mailto:ssahling@les.com)  
[cheryl@wyopowerproducers.com](mailto:cheryl@wyopowerproducers.com)  
[pierojd@udel.edu](mailto:pierojd@udel.edu)  
[Christine.Philipps@pse.com](mailto:Christine.Philipps@pse.com)  
[paul.fox@bracewellgiuliani.com](mailto:paul.fox@bracewellgiuliani.com)  
[Christine.Philipps@pse.com](mailto:Christine.Philipps@pse.com)  
[dallen@nyiso.com](mailto:dallen@nyiso.com)  
[abe.silverman@nrgenergy.com](mailto:abe.silverman@nrgenergy.com)  
[chris.ohara@nrgenergy.com](mailto:chris.ohara@nrgenergy.com)  
[temiller@bpa.gov](mailto:temiller@bpa.gov)  
[efalatko@bpa.gov](mailto:efalatko@bpa.gov)  
[Mohammed.Beshir@ladwp.com](mailto:Mohammed.Beshir@ladwp.com)  
[Randy.Howard@ladwp.com](mailto:Randy.Howard@ladwp.com)  
[MbeLively@aol.com](mailto:MbeLively@aol.com)  
[Melinda.Marquis@noaa.gov](mailto:Melinda.Marquis@noaa.gov)  
[Andrew.Stern@noaa.gov](mailto:Andrew.Stern@noaa.gov)  
[knordt@gcpud.org](mailto:knordt@gcpud.org)  
[dave@daveolsen.net](mailto:dave@daveolsen.net)  
[kpatton@cleanlineenergy.com](mailto:kpatton@cleanlineenergy.com)  
[alyssac@cfra.org](mailto:alyssac@cfra.org)  
[larry.yadon@swpa.gov](mailto:larry.yadon@swpa.gov)  
[reinhold@ctcweb.net](mailto:reinhold@ctcweb.net)  
[jseesel@ftc.gov](mailto:jseesel@ftc.gov)  
[Thomas.Bessette@state.ma.us](mailto:Thomas.Bessette@state.ma.us)  
[mary.ellen.paravalos@us.ngrid.com](mailto:mary.ellen.paravalos@us.ngrid.com)  
[Katherine.Lovette@us.ngrid.com](mailto:Katherine.Lovette@us.ngrid.com)  
[mscalvert@tva.gov](mailto:mscalvert@tva.gov)  
[swolfe@viridityenergy.com](mailto:swolfe@viridityenergy.com)  
[afreifeld@viridityenergy.com](mailto:afreifeld@viridityenergy.com)  
[kmfox@aep.com](mailto:kmfox@aep.com)  
[mrowtham-kennedy@aep.com](mailto:mrowtham-kennedy@aep.com)  
[dlsnider@aep.com](mailto:dlsnider@aep.com)

Carol Opatrny  
Opatrny Consulting, Inc.  
Suite 3300  
700 5th Avenue  
Seattle, WA 98104-5058