Overview of the 15th Annual

- Closing Commentary by Aiman El-Ramly
  - Senior Vice President, ZE PowerGroup Inc.
  - COO, ZE Power Engineering

- The best thing about closing commentary, you can say what you want and it does not matter!

- Thanks to Doug Fraser and Bill Dearing for putting this 15th seminar together

- Thanks to all the speakers and sponsors who help make this event a focal point for the energy business in the Northwest
Basic sentiment is that theory, practice and economics are colliding

- Doug Fraser - in the Northwest we make the best of the way things turn out
- Hardev Juj – we are going to have a hell of a trouble
- Hardev Juj – interconnection is not the issue, the issue is can we operate
- Carlos Clay – FERC incentives may not be adequately promoting transmission development (summarizing potential market sentient)
- Jeff Atkinson – Carlos has gone through step one of the assimilation process – he has removed his tie (on being welcomed to the Mid-C)
- Robert Kahn - wind is really radically disruptive – no point in arguing that
- Gary Ackerman – what else do we have to offer but blackouts and love
- Steve Soule - This California REC thing has been messed up from the beginning … will never be a truly active market
- Tim Belden – BPA not looking so bad
- Thomas Johns – recycled electric car battery parks … not happening
Mid-C as a Microcosm of Global issues

- Arab Spring
- PIGS in Europe
- Financial Crisis
- Energy Crisis
- Wind Germany
- Wind US?
- Wind China
- Nukes France
- Nukes Japan
- Nukes US?

- Transmission
- Transportation
- Dodd Frank
- Green / Renewables
- LNG US
- LNG China
- Big Hydro US
- Big Hydro China
- Coal US?
- Coal China

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Deep Thoughts on the Year

- Things that are hard to believe
- Middle-east liberation – the Arab Spring
- You-tube Tsunamis videos – Fukushima
- Chinese growth – including US debt holding
- Extent of German wind power – 7% nukes out by 2022
- Extent of French nuclear power – 75% - 18% export – 1/10th emission of Germany / kWh
- How poorly the PIGS are doing – will Greece default – ok expected
- The financial crisis will not go away
- Dodd Frank is delayed – actually can believe
Deep Thoughts on the Year

- Middle east liberation may mean new political and trade alignments
  - Does the mid-east look east as has Africa
  - Does China tap Arab oil and develop new corporate ties

- The Rise of China
  - Biggest energy consumer, overtaking US
  - Fast growing economy
  - Holds US debt
  - Chinese may rule the world – maybe – possibly – mutually assured economic destruction (the X-man will not save the day)
  - China and US also locked in ongoing energy crisis
    - Who gets the oil
    - Who gets the LNG – retrofitting for export
    - Who develops the international trade ties
    - Who has the right to uncontrolled emission
Deep Thoughts on the Year

- Collateralization - the international serial killer
  - The financial crisis continues to mutate and take new victims
  - Portugal, Italy, Ireland, Greece and Spain – swing back on collateralized debt: foreclosure and defaults – still in banking crisis – owe over 2 trillion to Europe and US
  - US banks still participating in the back side
  - Financial crisis is a hold back to energy – the two are not totally separable

- Fukushima – Japan destroyed – energy markets yawn
  - Big nuke, small nuke, no nuke
  - Nuclear scare obvious, impacts on oil and gas due to switching is negligible (gas prices stay low)
  - Germany folds – out by 2022
  - France is all in
  - TVA takes the middle ground, set to build small / modular Nukes
Deep Thoughts on the Year

- Lean, mean and not so green
  - Carbon trading – where is that
  - RPS – what is that
  - Al Gore – who dat
  - Big Hydro – where its at
  - Big wind – follows that
  - Nuke – is a little of this and that
  - Fossil – won’t go away, everyone knows that
  - LNG – we are going to export that
  - Green / Renewable / Alternative – everything that is not coal, including coal, straight as that
  - Transmission – need more to connect all that

Chinese coal blamed for warming err … cooling (The Register)
Challenges Transmission / Renewable

- All in Agreement, Transmission is the lynch-pin to Northwest development
  - It is a utility process steeped in planning – tough, tough stuff
  - Remains a traditional business – probably why northwest has a leg up
  - Renewables causing big transmission issues
  - Still don’t know what to do about California demand – and wishy washy

- Darrel Gerrard, Pacificorp
  - Gateway project well on the way – connecting regional customers – 2019 – 2000 miles, 3000 new MW – as usual NIMBY is a big issue

- Hardev Juj, BPA
  - BPA is still da man, 75% of the northwest Grid
  - Conflict between traditional and renewable generation – planning challenge
  - Biggest renewable supply in the world – more generation than load – common, 17,000 MW renewable in the queue – how do you dispatch – more than we need / can utilize – need to revisit development
  - Real physical constraint, catch up to policy

- Marv Landauer, Columbia Grid
  - Building for California transfer, 33% RPS – heavy congestion
  - Congestion out of Montana, source and sync not connected
Renewables in Transmission

○ Carlos Clay, FERC
  ▪ Flattening the playing field and bringing players together
    ▪ a return to central planning
    ▪ is transmission slowly being retracted from competition
    ▪ Is transmission being subsidized as a national good / part of energy security
  ▪ FERC incentivizing new transmission
    ▪ Pricing reform
    ▪ Planning reform
      ▪ Return to regional planning
    ▪ Transmission rate incentives
      ▪ Questions as to adequate
  ▪ Variable Energy Resources Integration
    ▪ Real time scheduling discriminatory
WSPP / Intra-hour Update

- Jeff Atkinson, Grant County PUD
  - Must ensure competitive outcome
  - FERC is facilitative – if not approving
  - Avista is what it is – NOI
  - Will re-file WSPP schedule D and E
  - Producing ITAP – many subscribers – Grant PUD at top of list ;)
  - Believes it will be on every NW traders desktop
    - Has transmission helper – nice feature

- I Totally Am Pumped
Robert Kahn, Northwest and Intermountain IPP Coalition

Not sure what Robert was saying but he said some cool things

He too is totally pumped

It is called Prophylactic anti-trust exposure

I like my members to hate each other

Electricity is about preservation of civilization as we know it
  - Not doing a good job of low cost high reliability
  - Wind is really radically disruptive – no point in arguing that
  - Society wanted wind power that is why we are obligated to figure out how to do it
  - Institutional barriers to it – Gridwest last gasp in NW at independent system operator - we failed and it is too bad

We are perfect for a John Stewart Script

Good intentions are no good if her implementation is bad

Qualitatively different situation than we have been in before
The Burrito … or is it the Gyro?

- Having trouble calling the California market a market
- Namely the leadership of the ISO did not believe in competition
- Hope the new leadership will be open minded and put pressure for improvement
- Top five at the ISO
  1. Capacity Payment – reaching settlement
  2. Local market power mitigation at the path level
  3. Convergence of bidding at the interties – stop the wealth transfer via shutdown
  4. Renewable integration – simplify the day ahead schedule
  5. Circular scheduling incentives
- Cap and trade delayed to 2012
- Not a one of us does not understand that 33% RPS will make energy bills go up tremendously – die will be cast PPA = QF
- Politicians followers not leaders – will react after consumer complaints
- Running into the next Black Swan event – 2014/15 for discussion
Wreck Update

- **Steve Soule, IVG Energy**
  - I-937 a driver for REC trading
  - RPS driving compliance market
  - Activity is slow and the market is flooded, waiting on California
  - Can be tough as no certification
  - Not going to see huge dollars
  - This California REC thing has been messed up from the beginning – will never be a truly active market

- Basically REC is a Wreck
Integration a Comparative

- Tim Belden, Energy GPS
  - Increased wind = system disturbance = resigned rates and higher costs
  - DOE 20% renewables by 2030 – just getting started
  - Here in the NW it is BPA versus Pacificorp
  - BPA may have the most dense wind penetration in the world
  - As penetration gets higher cost go down – but no correlation
  - RTOs try to make wind generators look like everybody else
    - Varying responsibility for wind forecast
    - Set point in real time
  - Forecasting has a major market effect
  - How to be an RTO without being an RTO

- BPA not looking so bad
  - Across many factors
  - Have good taste in music
  - Mainzer – A Mighty Wind
Solar Power Update

- **Thomas Johns, Summit Power Group**
  - Growth in wind potential – probably grow 50% a year for next five years
  - Battery storage will be at cost approaching $1000kW in 3-5 years
Conclusion – or not

- Not sure we are any further now than last year
- Global issues will have huge impact on local policy
  - See massive financial change
  - See global political realignment
  - See energy moving east
  - See green crisis – realization that it can not be sustained without massive compromise
  - See cost increases and challenges from wind integration causing a market reframing – already happening

- See necessary nuke revival and emphasis on traditional generation
- See the Northwest continue to centralize planning and try to insulate from global and interconnected market

- Possibly welcoming the security of BPA dominated market with the proviso of inclusive planning
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