



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

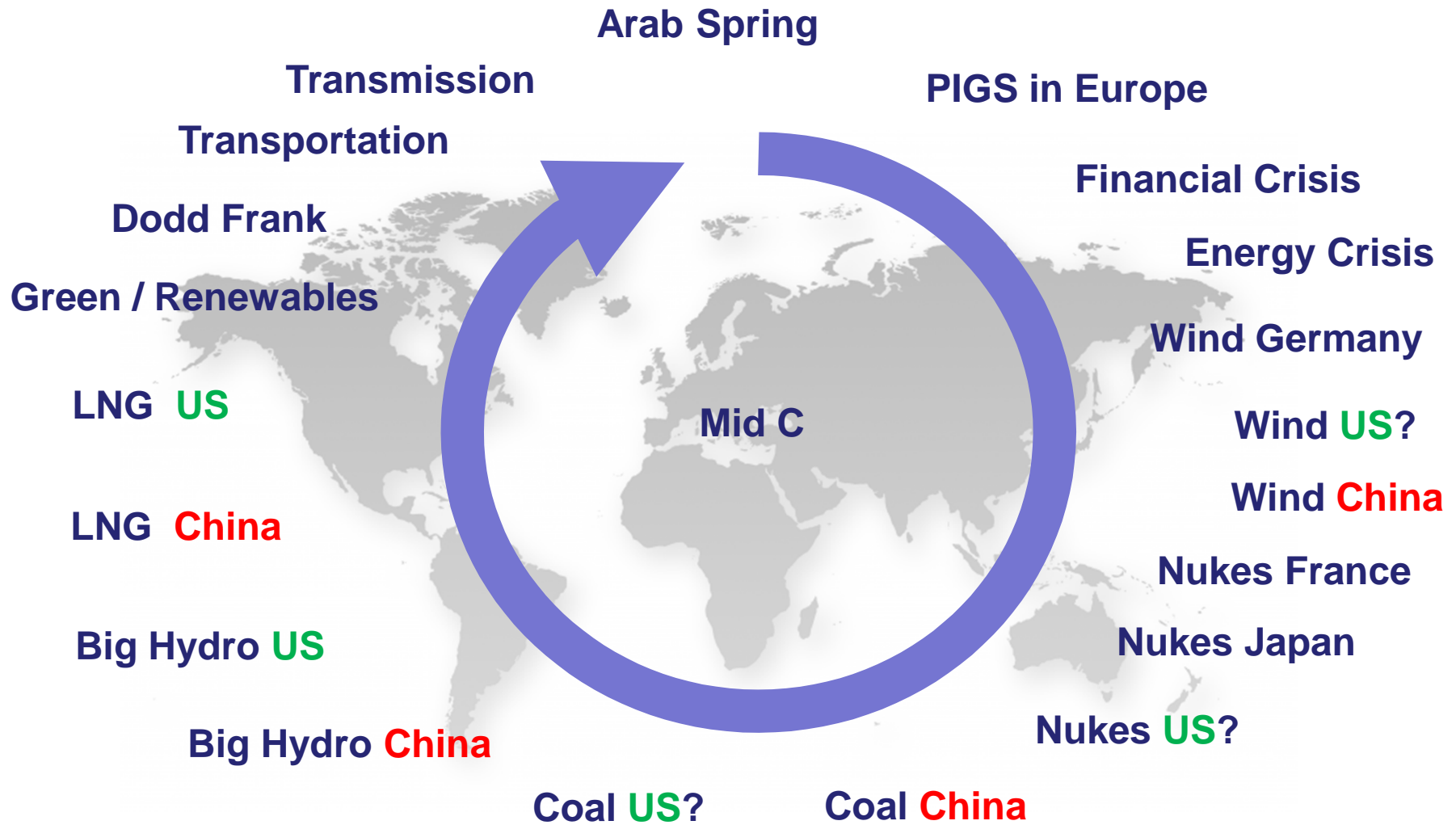


- **Basic sentiment is that theory, practice and economics are colliding**

- 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 sentiment)
- 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



- 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



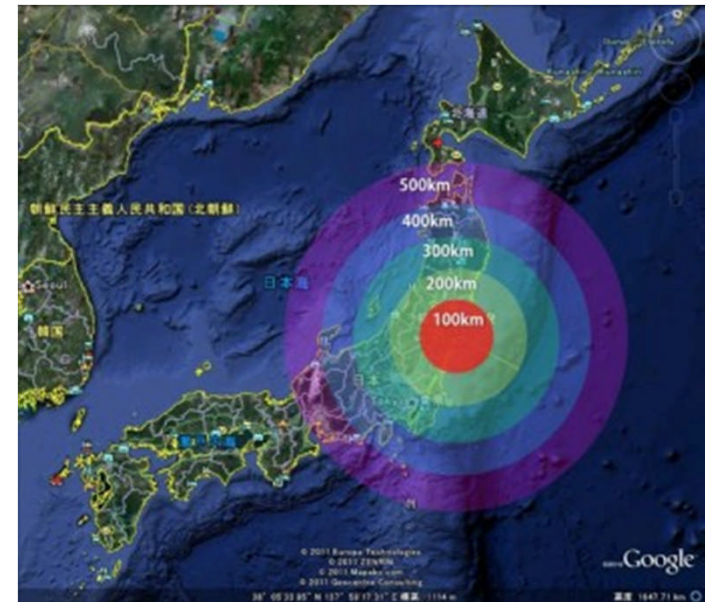
- Middle east liberation may mean new political and trade alignments
 - Does the mid-east look east as has Africa
 - Does China tap Arab oil and develop new corporate ties

- 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



- 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



- 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 washyness
- **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



- **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 incenting 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



- **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



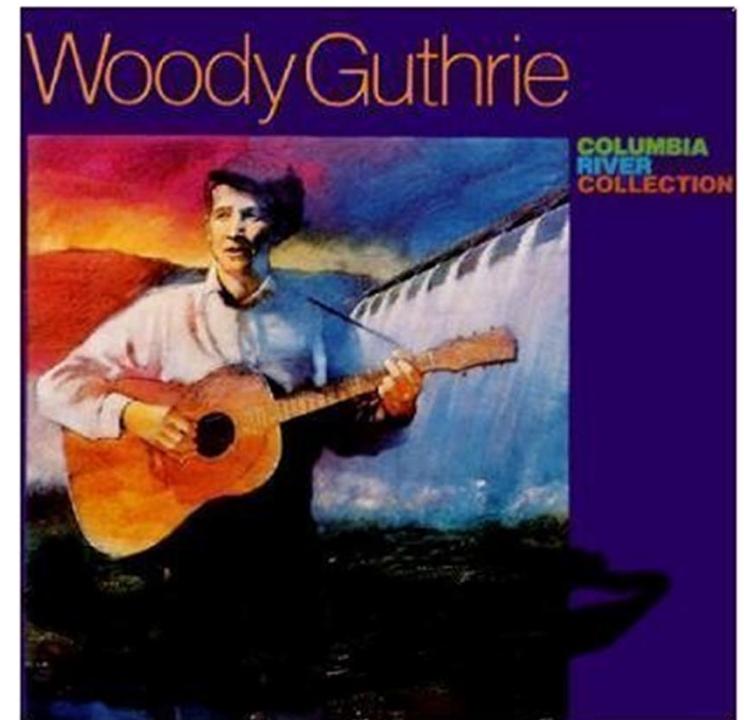
- **Steve Soule, IVG Energy**
- I-937 a driver for REC trading
- RPS driving compliance market
- Activity is slow and the market is flooded, waiting on California
- Can be tough as no certification
- Not going to see huge dollars
- This California REC thing has been messed up from the beginning – will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

- Basically REC is a Wreck



- **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**



- **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



- 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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