

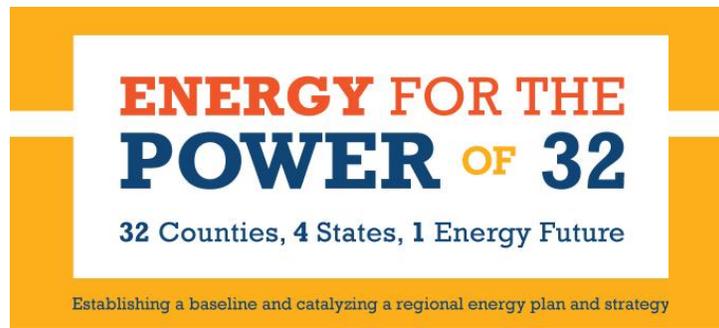
ENERGY FOR THE POWER OF 32

32 Counties, 4 States, 1 Energy Future

Establishing a baseline and catalyzing a regional energy plan and strategy

December 11, 2014

**David L. Lawrence Convention Center
Pittsburgh, PA
Participant/Individual Survey**



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The following is a compilation of all the insights and recommendations submitted during the Energy for the Power of 32 event per the Participant/Individual Survey sheets (78 were submitted by attendees). Toward enhanced consistency, some inputs have been recorded in categories/headings other than original submission and duplicate comments were attempted to be counted rather than repeated. Found at the end of this compilation are additional comments that are different as gleaned from the table work sheets submitted as summary of participant deliberations by table groupings.

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Values and principles that should guide development of the plan:

Data-driven:

- Quantitative, data-based analysis of energy resources, needs, applications
- Ethical, open books approach for fossil fuel production and electricity generation
- Assess before jumping to conclusions
- Focus on identifying root cause
- Transparency, authority by facts (3)
- Bold, but science driven (2)
- Quantitative, evidence-based data, measurement, what is not measured is not managed (4)

Accountability:

- Responsibility and accountability of the industry (2)
- PA Constitution: Art.1 - section 27: The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. PA's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.
- Look at the big picture
- Consider the region's history/lessons, boom and bust (4)
- Respect: land, water and air/ rights/ health of citizens and communities (6)
- Consistent policies
- Risk measurement and mitigation
- Thinking ahead and planning forward for future generations (2)
- Climate change is here now and is a long term emergency we should address as no. 1 priority (2)
- The laws of physics and the rule of nature do not care about our "economic" institutions
- Leadership (3)
- Minimize ideology
- Accountability at all levels
- Transparency
- People matter
- Involve a broad spectrum of region's organizations and energy-related assets

Economics/Innovation:

- Technologies get cheaper with time.. solar and wind are investments in technologies. Gas, oil, coal investments are in resources which get more expensive with time.
- Economic opportunity and living wages (2)
- Cost of development of energy types
- Let the market dictate the success
- Align externalities with direct costs (3)
- Address transition issues
- Use some proceeds to help communities get to cleaner energy
- Don't try to pick winners/losers using incentives. Let market decide by making sure that everyone pays the full cost including externalities (policy and regulation to enforce paying for health and environmental externalities)
- Must not be just a raw material colony -- don't just drill and ship out
- People (and, more generally, "living things") are more important than abstract institutions (e.g., corporations, political parties)
- Protecting the health of our citizens. Externalities like air and water quality should be built into energy development
- Efficiency of solutions and profit
- Labor transition
- A region that is sustainable - can thrive on its own
- Provide economic and other benefits to region (e.g., environmental, reliability)

Frameworks:

- Apply The Natural Step to regional planning process and share results with the international TNS community
- Take advantage of the resources in our region (coal, gas, wind, water, solar, nuclear) so that we can pass them on to future generations - use them wisely and responsibly
- Efficiency (5)
- Systems integration/level approach (2)
- Be iterative/iterate
- Endure and adapt
- Clean, cheap, reliable, renewable, healthful

- Social cohesion, working together
- Sustainability (financial, social, ecological), triple bottom line (7)
- Resiliency
- Environmental/environmental justice/social justice/ air/water/biodiversity (8)
- Reliability (2)
- Cost
- Distribution of energy
- Respect
- Safety
- Policy keeping pace with community, environmental, and economic needs
- Environment/economics tradeoff and natural capital, balance (3)
- Long term, it can support itself, built to last (2)
- Risk aware policy
- Precautionary principle regarding shale gas development has been ignored
- Precautionary principle (look before you leap)
- Make sure plan helps future generations without putting too much of a burden on current workers
- Collaboration, innovation, inter-disciplinary, comprehensive, continual growth/development
- We cannot begin by assuming our energy "needs" are primary and that all policy options must start by passing the test of meeting those a priori expectations of energy growth
- Independence in operation
- Forward looking with tech development/implementation (2)
- Value benefits of cheap electricity
- Independence as if P32 region were a separate island nation
- Conservation (2)
- Education
- Diverse stakeholders
- The commons should be protected (air, water, public lands, etc.)
- Speak about the issues clearly and succinctly in a way that lay people can understand and participate/engage
- Make use of regional talent and resources

Energy Sources:

- Value and invest in distributed/renewable sources
- Renewable as a principle (2)
- Need a balanced portfolio of sources
- Clean (2)
- Energy efficiency is an economical source of generation
- Utilizing, experimenting with all the options
- Using local resources
- Buy the energy from local sources of least environmental impact but have a reserve for emergencies, have a system that relies on sources with demonstrated performance during crisis

Aspiration:

- Catch up to and surpass other cities in goals and progress
- Transition is important - regional economy should not be impacted in an immediate manner; phase in new alternative energy ideas
- It is critical to reduce our carbon footprint now. Face our economic fears and move forward.
- Address transition issues
- Innovation, imagination, creativity as values

Social Equity:

- The plan should be forward thinking but take care not to unjustly burden certain populations.

- Fairness: to landowners and communities
- Better energy for all, regardless of income, fairness (17)
- Quality of life
- Equity/cost-benefit allocation (spatially among communities and over time/generations)

Public Health:

- Healthy energy sources (6)
- Clean air is a right
- Conscious of health and comfort of vulnerable population
- Health issues
- Energy efficiency and public health are inseparable
- Health and community impacts must be central consideration

What are key issues that must be addressed:

Efficiency:

- Efficiency assessment and improvement in generation, transport, end use (2)
- Implementation of efficiency improvements (2)
- Integrated systems
- What is the true cost of wasted energy - how can it be reduced, less waste?.. policy, regional support, cross state lines
- Buildings energy efficiency: new and retrofit

Sources:

- Unconventional drilling and mining
- Diversify the portfolio, not put all eggs into one basket (3)
- Pursue wind and solar strongly
- Taking into consideration how prevalent fossil fuel is to our region

Policy:

- Abandon carbon credit system, rather develop use/user specific rate structure
- Policies that support long term planning
- Incentivize energy efficiency and renewables much more (2)
- Regulations
- Goals
- Legislation and policy that supports and promotes renewable energy
- Net metering needs to continue and be expanded
- Incentivize people to live in the city, in the built environment, and have sustainable options to get to jobs in suburbs
- State policy, we have 4 states within 32 counties, multiple governments, mis-matched state policies (2)
- Laws/regulations must become more flexible to alternate utilities
- Expand the renewable energy portfolio standard
- Willingness to address policy change
- Policy impediments
- Regionalism and opportunity for innovation
- Municipal, public policies - franchise laws
- Allow and facilitate community solar and other co-op approaches
- Mandatory disclosure policy on energy use

Education:

- Communication, marketing, training for lawmakers, consumers, industry
- Education and training of workforce (all functional levels) to develop, improve, implement, operate, safety, maintain new energy infrastructure (2)
- TV advertising to educate people, especially in rural areas
- Education of stakeholders of urgency of problems and potential solutions
- Public support
- Educate consumers on options and efficiency - weatherization
- Granular and shared data, more measurement (2)
- Data sharing -- residential/neighborhood (2)

Jobs:

- Which are lost and which to create.
- Workforce (2)
- Worker transition, what happens to coal communities as we move to cleaner energy
- We need healthy energy with jobs in the state of WV

Demand:

- Decrease consumption (2)
- Clear definition of needs and approaches to meet fossil fuel/electricity demand
- Attenuating peak demand (electric and transport)
- Decentralized services to meet local needs
- Demand drives production. Is all the local and regional production truly meeting local demand or meeting export demand with only a trace amount for local demand?
- Address how to accommodate high volume users energy needs through onsite alternative energy options

Alternative Energy:

- Roadmap and implementation plan of viable, cost-efficient alternative energy sources.
- Solar/wind intermittency and grid integration
- Transition from coal to alternative energy - feasible, viable
- Waste reduction
- Promote renewables (2)

Implementation:

- Implementation support (financial/training/maintenance) (2)

Sustainability:

- Long term planning... need to make choices that are not just profitable now but are profitable long term

Public Health Impacts/Benefits: (9)

- Air quality (5)
- Incorporating health implications (environment -- public health)
- Environmental equity
- Unconventional gas
- Impact on public health of today's energy flow and future health benefit (risk) offered by a new regional plan
- Whether shale gas is a clean source or not. More monitoring and study should be done and reported on
- Change the narrative (health and energy)
- Water conservation
- Outreach to educate people on the health effect of types of energy
- Effects on community of "outside" industries - what benefits to the community is the industry offering, ensuring

- To connect to health, think of an epidemiology indicator that connects health, finance, and exposure.. "years of productive life lost (YPLL)

Carbon:

- Carbon reduction... de-carbonization of energy choices/sources (4)

Economics:

- Is energy a commodity or service
- Economic opportunities in coal country/rural counties
- Establish a balanced approach that meets our region's vision
- True cost accounting for externalities (3)
- Assess opportunity costs of not using a resource for something else
- Loss of income and innovation going to shale gas development .. this fossil fuel will soon become too expensive and toxic to be acceptable and we have meanwhile lost time and talent
- Capital (2)
- Potential new electric power equipment suppliers
- Costs
- Place making (2)
- Responses to world price fluctuations
- Financing macro (infrastructure) and micro (building scale) levels, i.e., incentives to private sector to take lead
- Jobs per transition...repurposing fossil trade workers (2)
- A grid that becomes distributed and pays homeowners for generating excess electricity
- Business models of utility companies -- decoupling so that utilities have an incentive to advance conservation and efficiency, distributed energy, and grid services that facilitate renewables and consumer choice/options -- pilot a decoupled rate program
- Getting "shale right" - both lowest possible impacts on environment, health, and communities and capturing the legacy of prosperity by adding value to the raw material here
- Who pays
- Entrenched business models, legacy infrastructure
- Transition costs (jobs)
- Export of energy from our region-- are we a natural resource colony with the role of being sacrificed for economic gain (2)
- New business models
- Incentives for energy conservation/reduction
- Subsidize renewable energy with tax
- Raise the gas tax
- Availability of renewable energy sources to all income levels
- Incentivize long term change
- Equity of utility service cost and continuity of service across variable contexts and scales
- Developing an equity-based utility service cost scheme to eliminate the need of the LIHEAP
- Vision of future energy resources supplying energy in the region for power, transportation, industrial, and residential/commercial
- Region's use/production of energy for economic development (including export) and for products and services

Transportation:

- Don't punish people who need to travel for work, etc. not everyone can ride the bus
- Renewable energy for transportation
- How would different fuels affect transportation
- Increasing public transit and mobility in/to the suburbs to reduce single occupancy vehicles, specifically to the office parks
- Transportation costs and efficiency

Environment:

- Watershed and ground water (2)
- Integrating energy with water, land use and other regional systems -- look at the region as a system comprised of all these interrelated systems
- More and better environmental monitoring
- Protection of abundant natural resources, specifically water
- Clean water maintenance, storm run-off/combined sewer
- Climate change implications/ lifecycle GHG emissions (2)
- Topography
- Competing land uses

Infrastructure:

- Local grids
- DC power
- Aging coal infrastructure - can this be repurposed for a renewable source?
- Possible loss of grid reliability with decommissioning of coal power plants
- Old/out dated/aging infrastructure -- unadaptable infrastructure
- Look at small-scale energy systems (community-scale) for alternative solutions
- Constraints: imbedded infrastructure.. markets (exporting energy to other markets)
- Current invested and built infrastructure = inertia
- More efficiency in land use

Practical:

- Balancing societal/regional goals with technical reality and financial resources
- Fear and pushback from traditional utility establishment to renewables and energy efficiency measures
- Risk in change
- Convincing people to change
- Getting utilities on board
- Do we have any will or desire for a plan?
- Adaptability to changes in information technologies
- Socio-political...engineering part is pretty clear cut)

Greatest opportunity we cannot miss:

Assets:

- Responsible use of current fossil fuel resources (shale oil & gas) while continuing to develop alternative energy sources and related infrastructure (including grid redesign/inclusion of micro-grids/two-way grid)
- Take advantage of universities, trade schools, educational institutions and young people's innovative thinking
- Retaining the engineering and technologically inclined talent from our region's education institutions
- The vast wealth of knowledge, capability, and motivation available in our region of 32 (2)
- History and current intellectual value
- Water and rainfall (3)
- Utilizing the resources and infrastructure we have and enhancing or fixing what exists instead of building new and encouraging sprawl - in housing and infrastructure. Working on increasing our efficiency instead of changing infrastructure to other sources
- Our health should be at the forefront of the decisions we make for the smartest energy future
- The region we live in is so rich with natural resources how do we make sure it is there for the future

- Collaboration with higher education and with laboratories
- Regional use of resources and commodity assets- food, products, technology, manufacture, tourism and recreation, etc.

Versatility:

- If major investments are to be made in energy distribution systems, we should make anticipatory investments, not just modernize it. What are energy needs and options in the future going to look like. If unable to predict completely, make the system easily upgraded.
- Holistic energy strategy as a region and nationally
- Positioning the region as an energy leader
- Maintaining energy security indefinitely
- Energy integration: combined heat/power, microgrids with imbedded heating from waste heat, NG microturbines
- Given our regional climate and challenging topography, demonstrate that a balanced, integrated source grid that takes into account reverse distribution from alternative energy sources (hydro, wind, and solar) subgrids in combination with existing sources (coal, nuclear, natural gas)

Economics:

- Measuring the true cost of our existing systems
- Provide economic and other incentives for investments to develop for the future....large investors are now looking at energy opportunities that help combat climate change (2)
- Value of rainfall in the region
- Exporting our technology to countries like China
- Cost savings
- Diversify on economic dependencies
- Personal responsibility
- Using the economic power to benefit other areas of region - social, education, diversified industry
- Time of use electricity prices to encourage electricity storage and solar. Higher price for peak demand
- New financial/business models
- Carbon tax to reduce emissions (consider rebate incentives).. this requires clear objectives and standards as part of reduction tracking in the region

Sources:

- Consider consequences of phasing out coal power plants
- Diversifying so when resource is depleted, other opportunities remain

Innovation:

- Green construction and energy efficient homes
- Need to cultivate the new innovative ideas regarding our energy future.. not be afraid to take an energy risk-
- renewable energy: solar, wind, geothermal
- DC power grid (2)
- Change infrastructure and policies to adapt to new technologies trying to get Marcellus Shale right
- Changing to cleaner/renewable energy (2)
- Energy efficiency/conservation (9)
- Getting American entrepreneurs to develop energy efficiency and renewables (in Westmoreland Co. we recently lost a great solar panel plant because it was bought by a Chinese firm and run into bankruptcy)
- Use of shale gas, and liquid by-products (2)
- LNG - portable energy source to produce electric power
- Intelligent energy systems
- Identifying and promoting energy transformative technology (2)
- Improving the grid

- Carbon capture and sequestration pilot or demonstration project to demonstrate real clean coal
- Changing infrastructure and policies in ways that can adapt to advances in technology, i.e., don't commit to technology in a way that it is too expensive to adapt to further progress -- don't miss the opportunity to not repeat that mistake
- Investing in new, disruptive technologies that either exist or need introduction/development or not yet known
- Using green infrastructure to mitigate storm water and air quality issues
- Advanced manufacturing
- Electrification of vehicles allows for greater fuel flexibility by turning fuels to electricity first
- Microturbine CHP
- Gas to liquid vehicle
- A competition to spur greater efficiency and innovation

Accountability:

- Taking control of the legislative process from industry
- Ensure health impacts are incorporated
- Community centric planning (coordination, cooperation, collaboration)
- Research energy early before infrastructure is in place, before regulations come into place, more efficient solutions
- Civic/community engagement
- Promote and support increased consumer/producer responsibility

Systems:

- Integrating energy plans with other key infrastructure systems and taking a life cycle analysis approach
- More efficient transportation (4)
- Transportation infrastructure (rail, buses for public)

Policy:

- Applying the most up to date building energy codes: IECC, Std. 90.1
- Standard/guide of policies
- Energy efficient housing standards to save household income
- A carbon tax and dividend (2)
- Building codes.. not just catching up to IBC, but be a leader
- Get money out of politics

Education:

- Education about benefits outweighing costs
- Educating ourselves to that position where change may be difficult to accept but necessary to move forward

Biggest blind spot:

Export:

- Export of energy is based on market needs rather than regional consumer needs... develop difference market approach and profit models.
- Not questioning our role as an energy exporter

Accountability:

- Lack of accountability/internalization that we are all stewards of responsible energy extraction, production, distribution, storage, and consumption
- We only consider what it costs today
- Lack of insight when it comes to heightened regulation in regards to protecting workers and communities
- Not taking enough bold stand
- Collective leadership
- Favoring old buddies in fossil fuel industry and old laws that impede new distributed power options
- Not calculating all of the costs when evaluating different generators of energy
- Residential engagement
- Election cycles
- In-grained tradition of industry

Health:

- Health effects associated with exposure to: particulates, gas, changes in environ. factors assoc. with seismic activity
- Urban agriculture
- Complacency with the dangers of fracking, risks known and unknown (2)
- The environmental and health impacts of shale gas development

History:

- History of cyclical boom and bust related exploiting a single non-renewable source (2)

Jobs:

- Renewable energy will make some jobs obsolete; but will also create jobs
- Jobs are important but not at the expense of health and the environment
- Workforce readiness
- All jobs are not college-based employment

Sources:

- Assuming natural gas is the only answer (3)
- Question the prevailing wisdom that fossil fuels will continue to make up the dominant portion of energy (5)
- Continued devotion and dependence to coal as a fuel (2)
- Going small rather than going big
- Nuclear (2)
- Shale gas - it's not renewable, and while its cheap right now and creating jobs, this is not a sustainable model for future energy portfolio (65)
- Shale gas is not clean
- Shale gas won't bring back manufacturing prominence of the region and solve all regional economic problems
- Fossil fuel focus and fear of change
- Need to proceed with caution to prevent an environmental catastrophe with groundwater, carbon, health, etc.
- Pipelines
- Volatility of natural gas prices and vulnerability of infrastructure changes to these cost sensitivities
- Use natural gas to power transportation
- Need to develop a way to use coal as "clean energy"
- Role of solar
- Advanced hydro-energy
- Over reliance on limited forms of energy

Science:

- Debating false issues not supported by science

Economics:

- The lure of wealth of fossil fuel resources available in our region (3)
- Misinterpretation that jobs and economic gain is the top priority
- Jobs/interests tied to coal and natural gas
- Socioeconomic impact of the system
- Not focusing just on climate change, focusing on livelihood
- Economic expansion/growth = success without looking at sustainability and health of humans and environment
- Equity

Planning:

- Not including the development of energy into community and regional comprehensive plans -- importance of planning in the beginning
- Land use and transportation
- Inability to do long term planning with short term political election cycles and to inevitability of change (2)
- Keeping in mind what we will be leaving for our future generation

Capacity:

- Economic development groups do not currently have energy knowledge people on their staffs
- Source of new electric equipment suppliers
- Public fear/knowledge
- Aging infrastructure (2)
- Unforeseen consequences of new technologies
- Lack of monitoring
- Consumer education.. empowering the prosumer
- Ignorance generally -- what we don't know, what we think we know that's misinformation
- Legacy systems
- Lack of leadership and unclear who is in charge of "energy"
- DEP needs to step up
- Education towards workforce needs of the future...needs addressed, curriculum adjusted
- Grid reliability subject to new electricity demands
- Developing an adaptable grid that can adjust for production variances of energy production
- Use of depleted reservoirs (e.g., natural gas storage, compressed air energy storage, water storage)

The one big idea or innovative approach that should be followed:

Innovation:

- Use of regional innovative momentum to develop national/global showcase for energy redesign and re-invention
- Use of innovation that requires skilled labor force (and therefore connection between energy, education and training and workforce development)
- Zero waste approach to energy systems
- Develop the region as a center of non-fossil energy production/technology and energy efficient technologies/materials
- Develop technologies for & encourage installation, conversion, and policies to support on-site energy generation
- Various sourcing opportunities
- The culmination of the small idea: smarter company lights/energy, smart traffic signals, internal household water purification
- Capturing energy in non-traditional ways - kinetic energy

- Access DOE funding for pilot micro-grid and co-gen projects
- Time of day metering and pricing
- Focusing on aging coal infrastructure and using the property and infrastructure and buildings for repurposing for renewables
- Google X prize for infrastructure innovation
- No one big idea can be the focus
- Need a complete retooling of our energy economy - huge investment in technology and construction
- Capitalize on newly available energy sources by producing high value, energy intensive products such as plastics (2)
- Push to independence
- Working with millennials and highlighting the benefits for their childrens future

Infrastructure:

- HVDC microgrids! (4)
- Decentralize power production, microgrids (8)
- Microgrid centered on critical users across the region
- Build better battery storage (3)
- Microgrid implementation/hybridize clean water tech. to simultaneously harness power for energy production
- Explore regional development of geothermal energy (electricity generation) for stabilizing the energy grid
- Big idea: solar roads
- Regional public transportation system
- Self-healing networks
- Development of urban green space to reduce carbon emissions and mitigate storm water runoff issues

Sources:

- Diversification/portfolio (2)
- Move to more renewable energy sources
- Solar co-ops -- owning part
- Compost...energy in the form of creating a new product... fertilizer
- Eliminate fossil fuels and become carbon neutral
- Alternative uses for coal, i.e., coal to liquids, etc.
- Use of natural gas

Efficiency:

- Promoting/achieving energy efficiency and utilization of wasted energy (6)
- Establish efficiency standards for new buildings and homes

Carbon:

- Challenge research universities to work on carbon capture and sequestration

Jobs:

- Consolidate industry/business in regards to raining workers
- Build renewable industries into jobs in rural areas to provide jobs and transition from coal, gas and oil
- Tie jobs to more sustainable options

Education:

- Help communities understand the benefits of using alternative/renewable energy sources
- Sense of urgency

Policy:

- New PA Governor should restore % of renewable energy (other states should also use)

- Energy benchmarking disclosure law to know what we are doing
- Improving health as a lever for improving energy use
- Need to reframe sustainable energy as a health and sustainable jobs issue
- Carbon tax
- Use fee revenue for educational purposes
- Incentivizing and training municipalities in weatherization strategies and to be able to conduct energy audits in facilities and homes
- Carbon free dividend
- P32 states should join the Regional Greenhouse Gas Initiative (RGGI)
- Consumer controls... demand response
- Balancing health impacts of energy choice/development with energy needs
- Demand response incentives
- Pushing towards regional independence in terms of regulation
- Using markets to drive solutions

Resources:

- Rainwater harvesting/filtering/selling and redistribution

What remarkable knowledge or resource must be tapped:

Data:

- Quantitative data analysis of energy resource and consumption
- Align externalities with direct costs
- Large scale, citywide research trials of things like green roofs
- Risk assessments
- Green balance sheets/financials
- Collaborative community energy use/data
- Highly competitive research assets
- Evidence based knowledge of science and engineering content (Science Ambassadors)
- Real time data in addition to historical data is needed
- Transparency, open access to information that is understandable for everyone (not lofty big scientific terms)
- Connection to health issues - to insist on getting the facts
- Review state energy plans

Innovation:

- Integration of innovative technologies with legacy infrastructure
- Biomimicry
- Solar and wind
- Low cost renewables
- Solar
- Shale gas utilization: natural gas vehicles, combined heat and power, revitalize petrochemical industry
- Water resources
- Building a better battery
- Advance genetic or organic algorithms to incorporate adaptability into grid distribution to accommodate near real time variable sources delivery that would drive end use service costs down

Academia:

- All the universities (8)

- Our incredible brain trust in universities and medical centers who can weigh in on the health and economic reframing of the challenges
- There is increasing study and programming for renewable energy in universities
- Engage the universities in the region with a charge to develop a model to show the influence of energy/production/policy changes on the energy outcomes
- Engage universities and students

Stakeholders:

- Philanthropic community (2)
- Lots of large companies have headquarters in Pgh. they have a lot of capital and manpower. Incentivize companies to contribute to their communities through social pressures.
- US DOE, NREL ASHRAE, AIS, IES
- Tap the region's wealth of knowledge (2)
- NETL (3)
- DOE, EPA, FERC
- Huge disconnect between policy that's set and what actually needs to be done to make meaningful change. Bringing people into this conversation that understand how good policy is set and also how to influence those who are setting policy will be necessary.
- Engineers -- new technologies/high efficiencies
- Biologists, sociologists, anthropologists
- Not just economic power holders... science leaders on innovative possibilities
- Phipps Center for Sustainable Landscapes
- Gas and coal producers: Range Resources and Consol
- Healthcare professionals (doctors, clinicians) (2)
- NGOs:
- Mayor Peduto
- Useful knowledge base

Engagement:

- Crowd sourcing some ideas
- Power of individual choices, but responding to incentives
- Social media (LinkedIn, Twitter)

Implementation:

- Support by policy at the cities and state level

Investment:

- Create a regional energy innovation competition and incubator supported by impact investing

Economics:

- Understanding how to make this a market opportunity
- Understanding how to keep our natural resources sustainable for future growth
- We must know that our natural ecosystem sustains us and so it must be protected

Other essential information sources that are needed:

Data:

- Quantitative technology data -- from unbiased experts -- available to the group that compiles the plan

- Granular data - on a community level
- Best possible data related to air, water, and social impacts of shale and downstream industry
- Detailed use breakdown, e.g., sq. ft. of retail space per capita, sq. ft. of home space per capita, office space per capita, and energy for these
- Research based on facts

Benchmark:

- Look to promising practices and policies and other regions of US and around world that align measurement with goals and outcomes (like what Ted Ford presented) (and transition) (15)
- Survey current understanding of/attitudes about energy choice, 32-county energy issues, and different forms of energy
- Historical back casting (2)
- County by county baselines
- Identify what are the low hanging fruits for efficiency and other efforts (2)
- Inventory our energy asset system, i.e. who is doing what
- Benchmark existing and emerging technologies world-wide that could provide solutions
- Water research surveying
- California energy success-stories in energy conservation, de-carbonization, net-metering and microgrid implementation
- Benchmark energy assurance plans

Life Essentials:

- Water - monitoring of water quality (ground and deep aquifers) on-going ()
- Air - monitoring of air quality long-term, 24/7 (2)
- Health impact studies, large databases (3)
- Morbidity
- Expertise about health and long term projections
- Health studies

Full Costing:

- Quantify invisible costs -- health, sitting in traffic costs, etc.
- Measure embodied energy
- True costs of energy development
- The costs of subsidies needed for energy sources (wind, solar, etc.) and mass transit
- Model externality costs sources and technologies (2)
- Cost/benefit data
- Forecasting costs/historical examples of major changes
- Cost/impact assessment of different strategies
- Carbon inventories and the EPA clean power plan
- Cost-effectiveness of alternative energy resources

Impacts:

- Research fracking activities
- Baseline air quality and water quality related to shale, social impacts (2)
- Climate change
- Research of natural resource/environment impacts (2)
- Better public health data on the impacts of all energy sources (2)
- More information on shale externalities - research
- Impact on energy costs
- Impacts on overburdened communities, health outcomes (2)

- Consol/Range Resources -- better training/community involvement in order to inform users of benefits/risks of operations
- More information regarding environmental and health impacts of natural gas... it's still a very unknown realm

Economics:

- Information on job-producing capacity of developing renewable energy sources and energy efficient technology (2)
- Long term analysis of market dynamics
- Impact on jobs as we transition to sustainable energy future
- Rather than the "cost of regulation" model the investments for improvement and innovation.. those become dollars that we realize and circulate in the economy

Behavior:

- Consumer (plus prosumer!) perception and drivers (for behavior change)
- ISO 26000 CSR standards
- Consumer desire/awareness

Education:

- Inform community of the energy diversity within the region...too much focus on gas/coal/oil as the only source
- Consumer education: - what solar panels costs - how to change service providers on electric bill - regulations per municipal building and zoning codes

Policy:

- Policy (current and potential changes) ecosystem and implications for business plans/strategies

Recommendations for designing the process:

Transparency:

- Define who develops the plan/explain how and why
- Be transparent.. discuss both sides of issues
- Make it visible with advertising, social media, etc.
- Don't let political influence of coal producing counties override the need/desire/wants of the consuming counties
- Consensus based and value-neutral decision making process with broad community voice
- Evidence based information and insights
- Making data accessible and readable

Inclusive:

- Solicit participants in plan design, engage all stakeholders (7)
- Collect input from participants - - explain what their interests and goals are
- Identify individuals and organizations who should have input
- Invite lawmakers (or involve them with appropriate briefings) (4)
- Engage public, government (local to federal) in discussion (2)
- Involve utilities, government, communities, and resource extraction employees
- Try to make it bipartisan issue
- Power of 32 process used before
- Create a task force with reps from key stakeholder groups or find another way to involve stakeholders in a committed, accountable way
- Involve sustainability/engineering/health/engineering students to collaborate to lay the groundwork

- Have a follow up program in each cluster of similar counties, i.e., Westmoreland and Fayette
- Bottom up not top down
- Rural and remote area stakeholders
- Have a variety of participants, not just energy and sustainability
- Local
- A database of resources - our huge network of nonprofits, energy providers, renewable companies, education programs, etc.
- Somehow give power to all voices equally
- Leverage PJM as the only regulatory commonality
- Make sure there is a balance between policy and market generation
- Include existing infrastructure: companies, nonprofits, etc.
- Involve the real estate industry (brokers, agents, lenders) particularly the Multiple Listing Services
- Work with coal companies for a cleaner way to continue mining
- Do a creative, trendy, public campaign that asks regional residents and businesses: what does energy mean to you, what do you want from energy
- Work with school age students, they are our future, they influence adults too (2)
- Interdisciplinary, inclusive, community participation
- Wiki (2)
- A moderated public forum, with "democratic" governance, where reference material and discussion can be shared on-line (2)
- Figure out how to involve citizen experts and activists so their expertise is truly valued and welcomed... as it is, citizens have no effective form of expression other than outrage...need to break through the mediation of all inputs through institutions and institutional memberships
- Watershed associations, other grassroots environmental groups they are citizen environmentalists - they know a lot and need to have their perspective shared
- Engagement across all socio-economic groups... increased engagement will lead to policy impact
- Include a spectrum of stakeholder users in charrettes/ideation groups/planning groups

Review:

- Elect review panel to decide on final version of plan
- Define process to add review team members
- Evaluate success/failure on ongoing basis to course-correct when necessary
- Develop a continuous improvement process that results in an annual report/plan with annual metrics and a highlight that changes year to year
- Measure progress and 360 degree feedback to change/refine/improve process.. repeat as often as needed to reach goals
- Surveys to elicit feedback from all (or random sampling) of people involved.. citizens, industries, etc.
- Review the outcomes of the Energy for the Power of 32 event to develop focus, scope and schedule of regional energy plan

Updates:

- Define process to update plan with cyclical review (e.g. once a year)
- Meet every 2 months

Buy-in

- How to get industry/private sector to buy in/agree with a regional, responsible policy strategy?
- Look to regional communities and businesses to determine key performance indicators
- Set a timeline for the development of a plan and utilize the network to provide feedback/buy-in
- Focusing on framework to gain buy in from communities and businesses
- The plan should keep the community involved so they have more of a buy-in
- Identify the benefits we want to see

- Enlist regional leadership (Gov., NGO, Corp.) for buy-in to champions the effort
- Communicate why this matters to individual stakeholders (ex. health and economic benefits)

Practical:

- Align communications and rational debates to timely solutions
- Policies aligned to goals rather than specific technologies
- Reframe around health and jobs and tangible benefits in order to get past intractable differences and among vested interests
- Roll out customized solutions that can connect/interlock with each other, ex. rural specific solutions that can support urban high density energy needs
- Technology based information
- Match problem/resolution/impact
- Create sub teams
- State coordination
- Talk to other regions and identify best practices
- Identify clear goals and objectives.
- Create a baseline
- Set clear expectations and communicate how to participate

Steps:

- Inform & Synthesis of best practices - Proof of concept & Stretch Goals - Constant Measurement, Reporting & Dashboarding
- Start with collaboration among HEI, Universities, MPOs and economic development agencies (plus appropriate others) with charge to propose plan in 5 years

Education:

- A public site to share knowledge
- Create energy information group that could answer questions about energy
- Communication with citizens
- Educational outreach
- Events like this are so important to open our minds
- Education is so important so we can help our communities
- Create a public web site for reliable and credible information and idea exchange

Recommendations for the plan itself:

- Develop comprehensive, readable plan and roadmap -- no more than 10 pages, but provide thought process and roadmap milestones
- Must be a living document in order to avoid a long delay to implementation and flawed implementation
- Need to attain commitment of resources to develop regional energy plan and ensure that resources are adequate and balanced
- A plan/strategy needs to be developed to implement the new regional plan. This could require smaller test programs
- Develop and implement energy policy and action plan (2)
- Baby steps to a comprehensive plan, break work into manageable pieces in logical order (2)
- Pilot programs in smaller regions to test and implement plans
- Don't make radical recommendations because there are many families that are depending on incomes from coal, transportations, etc.

- Create opportunities for partnerships

Set goals:

- Set regional energy goals, long and short term..SMART goals: specific, measurable, achievable, realistic, timing (4)
- Region wide goals to improve energy efficiency could not only reduce consumption but greatly educate citizens about energy, energy usage, and future renewables

Additional comments:

Dialogue:

- Keep discussions like E4P32 going (at least 2 per year)

Misc.:

- It's essential
- It appears that today's attendance was a well-represented group
- Look not only at implications of production in our region but also consumption (e.g., should we account for carbon embedded in consumer products consumed in Pittsburgh but where emissions are now produced in China/Guangzhou)
- No one from our county leadership came to this event. You must come to them
- Great assembly of speakers
- Cross collaborate on multiple
- More general education for the general public
- What about non-electric grid considerations?
- I really enjoyed the event. It really opened my mind to some great ideas to see clean energy in our future
- Need monthly meeting
- Today's event was an important, productive and engaging opportunity to come together with other concerned stakeholders..another in 6 months
- Thank you! This is so important - to think about the future of energy - for people and planet
- Post presentation PowerPoints to the website

Policy:

- National carbon tax essential to realign regional strategies

Participants Working by Table Groups

Energy for the Power of 32

(Only adding insights that are new/different from that provided in the individual worksheets)

Accountability:

- Commerce leapfrogging common sense
- Do no harm, Hippocratic oath
- Every energy producer to publish annual Corporate Social Responsibility (CSR) report/ISO standard
- Regional energy plan can bring back the democracy, empower the citizens, bring them into the process. Make them consumers, producers, and personally invested
- Need to define a leading governing body for determining energy direction and policy
- Add health costs/effects when considering energy choices. how many deaths are permissible with any specific energy choice?

- All levels of government need to establish a long-term legacy fund to address any future issues that may arise which have not yet been identified.

Key issues to address:

- Dealing with energy easements and future development
- Need climate objective
- Inconsistent municipal zoning laws and building codes that hinder renewable energy installations

Policy:

- Regional export tax...when resources leave the region, tax it -- if stays here, zero tax
- Writing regulations for the green infrastructure -- state code rather than individual municipality
- Address policy that prevents optimal transfer of energy between grids
- Renewable portfolios drive innovation and technology development
- Impact of national energy policy (generation of energy across state borders)
- Economic viability of proposals affecting competition with other areas

Innovation:

- Micro grids for hospital and businesses, fire, police re. power outage
- Opportunities to lead - unique in convergence of resources and industry.. opportunity to leverage a large portfolio of options (NG, coal, electricity, CHP, etc.)
- Invest in energies and technologies that would give region competitive advantage for exporting technology

Implementation

- Kickstarter
- Define different strategies and prioritize within each sub-region
- Form a clearinghouse list of volunteer experts
- Start at pilot scale then branch out and demonstrate successes
- Need research funding to push large scale change like shift to DC voltage
- Pittsburgh act as pioneer for testing DC lines
- Incorporation of four states into a single energy vision presents unique challenges because of the differences in state regulations, standards, and cultures...set of actionable projects across four states might be more feasible
- Focus on energy efficiency across the complete system with market based solutions to make our keep our region competitive

Engagement:

- Utility summit
- NGO efforts need to be better coordinated
- PJM needs to be at the table

Efficiency

- How can energy efficiency be promoted t\as a region and not individualized
- Disclose energy efficiency of homes at time of real estate sale
- Day cleaning of buildings for energy and better for maintenance workers

Sources:

- Solar and wind intermittency and integration
- Geothermal for electrical grid stabilization (not just heat pump)
- Efficiency is a power source... where does the capacity to sell efficiency and conservation come from -- new business models, new incentive programs
- How do we interpret our energy exports... good or bad?
- Capture thermal losses for reuse, like purple pipe system for water -- combined heat and power, greenhouse

- Wasting renewable energy through loss in the inefficient grid would be less bad than wasting fossil energy
- Cost of closing coal-fired power plants.. who pays for the transition?
- Remove barriers to community solar
- Increase useable space for energy creation.. wind turbines in parking lots, etc.
- Harvesting the power of our rivers (hydro turbines, etc.)
- Solar parking lots
- Biodigesters especially in a region with so much agriculture
- If natural gas is a bridge fuel, we can't see the other side of that bridge
- Gym equipment that generates rather than uses energy

Workforce:

- Coordinate community colleges to retool fossil fuel workers, vets, etc. in renewable and energy efficiency