The meeting was opened by Chairman Susan Shoemaker Benedict at 4:00 p.m. with a quorum present.

Welcome and Introductions: All meeting attendees provided a short introduction of themselves.

Declarations of Conflict of Interest and Ex Parte Communication: In order to remove any doubt of impropriety, the following task force and/or sub-committee members have declared interests. Bob McDaniel – Business Development Coordinator, G.O. Hawbaker, Inc. supplying contract work for drilling companies; Susan Shoemaker Benedict – property owner with expected gas industry development; Steve Greer – Senior Project Manger with Arm Group, Inc., sub-contractor/consultant to various companies involved with the gas drilling industry; Ken Hall – actively involved with property lease management; Greg Myers – Senior Engineer/Senior Geologist, DMS Environmental Services, providing services to the oil and gas industry; Joe Hart – employed by HRT, Inc. & PA Brine, who serve as sub-contractors to the natural gas industry; John Ferguson – employed by Columbia Gas of PA; Dean Lawrence – realtor with commercial real estate activity of interest to the natural gas companies; John Rodgers – banker with Fulton Bank providing financial services to the gas industry; and Steve Lyncha –
engineer with HRG providing consulting and engineering services to the industry. No other conflicts were announced.

Approval of Prior Meeting Notes:

Following a motion by Ken Hall and seconded by Bob McDaniel, the minutes of the October 10, 2011 meeting were approved as presented.

Announcements:

- The Chamber of Business and Industry of Centre County will host Task Force members for their November Breakfast Before Hours meeting. Representing the TF as panelists will be Susan Shoemaker Benedict, Greg Myers, Bob McDaniels, Ken Hall, and Todd Taylor.

Citizen Comment:

- Doc Taliaferro, representing Immix, stated that Immix and KCNet are partnering to provide mobile instant communication trailers for location at well pads at 1% of the cost of tower construction.

Presentation: “Economic Impacts of Marcellus Shale” – Tim Kelsey, PSU, College of Agriculture; Professor of Agricultural Economics; State Program Leader, Economic and Community Development Marcellus Shale Education and Training Center.

Tim Kelsey provided an overview of the recently released (August 2011) study titled, “Economic Impacts of Marcellus Shale in Pennsylvania: Employment and Income in 2009”. This study examined leasing and royalty dollars and quantified how they are being spent and where they are actually going. According to the study, approximately 51% of the land in the Marcellus counties is owned by residents within the county, 25% is owned by someone living elsewhere in PA, and 7.7% is owned by people living outside PA. The study was conducted in Bradford and Tioga counties.

Summarizing key points of the presentation:

- The majority of economic impact drops with reduction in development.
- Positive economic impacts occur at hubs such as Williamsport.
- 37% of the Marcellus workforce is comprised of non-Pennsylvania residents.
- Changes in the number of employed persons, not unemployment, is the most important of the two indicators.
- Sales tax information may provide insight but leasing and royalty spending has more value as an indicator of economic impact. Not all leasing and royalty dollars are immediately spent.
- Landowners: (1) invest about 55% of the total leasing dollars in the year they receive payment; and, (2) save or invest about 66% of the royalty dollars they receive – meaning that a significant portion of leasing and royalty dollars are NOT spent in PA in the year those dollars are received; thereby, reducing their immediate economic impact.
- In 2009, approximately 23,000 jobs existed in the natural gas industry.
- For every $1 in Marcellus industry spending in PA between $1.86 and $1.90 in total economic output is generated for a multiplier effect of 1.8 – 1.9.

Important “take away” for task force consideration:

- Identify opportunities to better capture royalty dollars at the local level.

Tim Kelsey’s complete PowerPoint presentation is attached to these minutes. He also distributed two documents that are available on the internet at www.extension.psu.edu

- Local Business Impacts of Marcellus Shale Development: The Experience in Bradford and Washington Counties, 2010
Comments offered:
- Percent of mineral rights owned locally is important for county-level economic impact analysis.
- The Department of Labor and Industry/ Center for Workforce Information and Analysis distributes a monthly “Marcellus Shale Fast Facts”. Jessica Bilger will distribute the latest issue electronically.
- Dave Mitchell stated that, (1) employment in PA in the last decade has decreased, (2) 106 jobs are now open in the gas industry in Lycoming County, (3) in Tioga County 8 miles of road were improved by the industry providing better infrastructure and new business development opportunities, and (4) welders are in high demand.
- The Natural Gas Industry has spent approximately $500 million in road improvements.

Old Business:

1) **CBICC Breakfast Before Business Meeting:** November 16, 2011. Audience is expected to exceed 100.

2) **Mobile Energy Education Training Lab:** The committee met immediately prior to the TF meeting. Co-chairmen are Jessica Bilger and Art Dangel. A tentative schedule was discussed with the overall goal to focus on education. Sponsorships were discussed and the committee will get back together to frame out the fee structure and solicitation process. Marketing this effort will be very important and tentatively the committee is considering the tag line, “Fueling Your Future with Natural Gas”.

3) **Bylaw Amendment:** On a motion by Ken Hall and seconded by Dan Fisher the following wording was accepted by the Task Force on second reading. The official vote on the proposed amendment will occur at the December 2011 meeting.

   Environmental / Infrastructure Committee -- focused on, but not limited to, issues that impact property owners and have the potential to be mitigated at the local level: water, roads, forest fragmentation, wetlands, agriculture, natural and cultural resources, lighting, noise, air quality, pipeline development, and reclamation.

New Business:

Greg Myers asked the TF members if they felt it appropriate for the TF to take a position on the proposed ban on drilling and suggested that a position statement be written for consideration by the Board of Commissioners. Bob McDaniel suggested that this topic be considered by the environmental sub-committee.

Committee Reports:

**Economic Development:** Committee report attached.

**Education:** Two events are in the planning stages for 2012: (1) Saturday, April 14, 2012 – Tentative Date for a Public Issues Forum; and (2) MEET-U Trailer.

**Environment:** Committee report attached.

**Public Policy, Planning and Legal Issues:** No Report. A question from Stan LaFuria concerning proposed legislation, SB 1100 and HB 1950, that would impose an impact fee on the drilling industry brought forth discussion related to the formula that will be used to determine the distribution of the funds collected at a county level and re-distributed to the non-host municipalities. Essentially, there are non-host municipalities in the Centre County that have received increased truck traffic volumes that will receive fewer funds than other municipalities that experience no impacts. This is due to the proposed formula based on population and road miles. Perhaps a different approach would be applicable.
This discussion generated a suggestion to begin an evaluation / analysis of "how to manage the local dollars received by the proposed impact fees on the natural gas industry?"

**Meeting Schedule:**

CCNGTF: December 12, 2011 at CPI at 4 p.m. (Second Monday, Monthly)
  Program: "Alternative Fuel Solutions for Gasoline and Diesel Engines"
  Presenter: Jim O'Donnell, owner – Alternative Fuel Solutions of PA
Economic Dev. Sub-Committee: November 17th at 7:30 a.m.
Housing Tour at HB Rentals: November 30th at 9 a.m.
Environmental Sub-Committee: December 1st at 9 a.m.

**Meeting Adjourned:** The November meeting of the Centre County Natural Gas Task Force was adjourned at 5:50 p.m. following a motion by Jessica Bilger and seconded by Ken Hall.
Present: Greg Myers, John Spychalski, Art Dangel, John Ferguson, John Rodgers, Steve Lyncha, Bill Hall, Emily Gette-Doyle, Jeff Mitchell, Travis Hartgraves, John Johnston, Nick Barger, Bob Jacobs and Sue Hannegan.

Discussion Topics:

1) Stranded Gas – consideration of this resource as an economically viable option to supply local residential distribution.
   - The committee welcomed Travis Hartgraves, Business Development Director, for Little Pine Resources, who operates offices in Dallas, TX and Clearfield, PA.
   - Bill Hall, Director of the Marcellus Innovation Center, Ben Franklin Technology Partners, informed the committee that the concept to use stranded gas began in 2008. The immediate goals are to determine the locations of shallow wells, the volume of gas generated from these wells, and the end users of the gas. Essentially this effort could become an opportunity to move shallow gas for local use. Little Pine Resources is currently collecting Clearfield County shallow gas well information as a first step toward developing a concept for distribution of stranded gas reserves. Centre County would like to be included in this effort.
   - Nick Barger shared the DEP Oil and Gas information for the shallow wells in Centre County.
   - Tasks ahead: find end users, determine how much gas they can use, expand or develop a transport system to supply the end user and identify the cost to do so.
   - Pipeline regulations stipulate that existing customers cannot subsidize expansion projects. Pipeline construction can equal $1 million/mile.
   - Pipelines vary by size and pressure with Marcellus gas typically being transported at 3000 psi compared to local distribution lines which can accept shallow gas, due to lower pressure. Columbia of PA transports at various pressures; the highest being in the range of 400 psi.
   - John Rodgers reported that GoodCo, a local company, converted 3 – 4 home HVAC systems per week (during the height of the 2011 construction season) to natural gas.

2) Natural Gas Fueling Stations
   - The Governor has proposed that NG fueling stations be placed at 50-mile intervals along major thoroughfares. Planning staff has searched for more specifics but none is currently available.
   - Veolia, Clyde Avenue, College Township is interested in converting vehicles to CNG.
   - Alternative Fuel Solutions is a new business that is operating in Clearfield County. They specialize in converting gasoline and diesel engines to run on natural gas. Following the meeting, planning staff confirmed that Jim O’Donnell, owner -- Alternative Fuel Solutions, will be the featured speaker at the December 12th CCNGTF meeting.
   - It was suggested that we collect additional information on the current use of the CNG fueling station that exists at the Uni-Mart located at the intersection of West College Avenue and Whitehall Road: number of customers, time to refuel, etc.

3) Home Heating Fuel Sources / Utilization of Natural Gas for Local Property Owners
   - Planning staff is evaluating several data sources as background information in support of developing a program for the increased distribution of natural gas to Centre County residents.
   - Maps have been prepared for the Mountaintop Planning Region (Show Shoe Township, Burnside Township and Snow Shoe Borough) identifying the type of fuel source used to heat private residences. Liz Lose, GIS Technician, shared examples of the maps that have been prepared.
4) Alternative Fuels and Advanced Vehicles Data Center
   • As a follow-up to the September committee meeting and the expressed desire by the committee to develop a guideline document for consideration by businesses and individuals wishing to convert to CNG/LNG, planning staff accessed an immense amount of information from the US Department of Energy website under the category of Natural Gas Related Links / Alternative Fuels and Advanced Vehicles Data Center (AFDC). A long list of natural gas related links is available at this site and requires more research http://www.afdc.energy.gov/afdc/fuels/natural_gas_related.html
   • Staff will begin to develop a one-page guideline document that can be used to direct interested parties to this information. By doing so, the information in the guideline document will be less likely to become outdated.

5) Building Lot Inventory
   • Also as a follow-up to the prior meeting discussion, staff has drafted an analysis of the available building lots in the Mountaintop and Moshannon Planning Regions in an attempt to quickly locate existing and approved building lots, with compatible zoning, and serviced by public water and sewer. These lots could potentially serve as a data bank to meet future housing demands. The end user was thought to be local developers, realtors, and building associations.
   • Discussion ensured on the appropriateness of sharing private property names in a web-based map without their prior knowledge and concurrence.
   • Planning staff will consider various options and report back to the committee at a later time.

5) Manufactured Workforce Housing
   • The housing tour of HB Rentals has been rescheduled for November 30th, at 9 a.m.

6) Rush Township Ordinance Discussion
   • At the request of the committee, Sue Hannegan provided an update on the gas drilling activity in Rush Township, the development of source water protection plans for the six community water systems in the township, and the two approaches under consideration by the township for the development of an ordinance to protect source water.
   • Greg Myers feels that the CCNGTF has an obligation to provide a response to the proposed ordinance that would ban drilling in the township. Both Bob Jacobs and Sue Hannegan stated clearly that they have advised the township that this position is indefensible. Likewise, the township’s solicitor has advised against this approach.
   • No further action was taken.

7) Committee Chairmanship
   • Greg Myers informed the committee that he and Stan LaFuria have served as co-chairmen of the committee since the CCNGTF was formed in April 2010. If there are others that are interested in taking on this role, please express your interest in doing so.

Note: The CCNGTF Bylaws state that the task force chairman, Susan Shoemaker-Benedict, will appoint task force member(s) to chair and/or co-chair each standing sub-committee.

Next Meeting: November 17, 2011, 7:30 a.m., County Planning Office Conference Room.
Centre County Natural Gas Task Force

Environmental Committee
Thursday, October 27, 2011

Meeting Discussion

Present: Steve Greer, Bob McDaniel, Bruce Snyder, Liz Lose, Mike Bloom, Matt Milliron, Bob Jacobs and Sue Hannegan.

Topics Discussed:

1) Committee Structure Update

- As a follow-up to the October Task Force meeting, the committee reviewed the following language for the proposed change to the bylaws, Article VI, Section 6.1.c. This language would be used to describe the role of the new consolidated environmental committee. Committee members are to review and provide comment on the following wording prior to the November 14th Task Force meeting.

  Environmental / Infrastructure Committee -- focused on, but not limited to, issues that impact property owners and have the potential to be mitigated at the local level: water, roads, forest fragmentation, wetlands, agriculture, natural and cultural resources, lighting, noise, air quality, pipeline development, and reclamation.

- The new name for the combined environmental committee, the Environmental / Infrastructure Committee, will be suggested at the November Task Force meeting as part of the bylaw change.

- Steve Greer and Bob McDaniels will serve as co-chairmen of the new committee.

- Additional members with an environmental background and/or DEP experience in the areas of hydrogeology, air quality, regulatory measures, and education would be great additions. Several names were suggested and committee members will make the contacts.

2) Roadway Safety Planning

- Sue Hannegan shared a new approach to collect the travel routes being used to access well pads in the county. The copies of notifications typically received (by the county) from engineering firms on proposed well pad locations will be researched for the driving directions to the pads. If this information is absent on the form, the consulting engineers will be requested to supply the data.

- Planning staff will begin the process of posting the “route information sheets” to the county’s website as they are completed.

- The county’s solicitor has commented that there are a few new revisions that could be made to the Road Use Maintenance Agreement. Planning staff will collect that information.

3) Pre-Drilling Water Testing Guideline Document #5 – update

- A copy of the text for the pre-drilling water testing brochure was received immediately prior to the meeting and distributed.

- Steve Greer and Bruce Snyder will review the document and offer comments for consideration at the December 1st committee meeting. The goal is to take this document to
the full Task Force at the December 12th meeting for approval and authorization to advance it to the Board of Commissioners for their consideration.

4) Source Water Protection Planning

- Planning staff updated the committee on the Source Water Protection Planning -- Technical Assistance Grant requests that have been, or are being, proposed in the county. This is a program offered by the Department of Environmental Protection and the plans will be completed by their contracted consultant. In addition, Liz Lose shared a map depicting the natural gas drilling activities in Rush Township and their location relative to public water service areas and watershed areas. There are 6 community water systems who access water from areas within Rush Township: Philipsburg, Houtzdale, Black Moshannon State Park, Cooper Township (Clearfield County), Upper Halfmoon Water Company, and Oak Ridge Water Company.
- Steve Greer will provide input for updates to the map.

5) Natural Gas Water Resources

- As a follow-up to the prior committee meeting, the planning staff conducted a “fact finding” process in an attempt to collect data on the active and inactive water sources used in Centre County for various activities.
- SRBC’s water allocation permits were reviewed to establish the types of users: community water systems, recreational users, industry users / non-gas; natural gas industry users, and state programs such as hatcheries.
- SRBC will be providing SRBC-approved uses and withdrawals in Centre County by the sectors identified above.
- The goal of this effort is to produce a list of suppliers located within a specified radius of the natural gas industry activity that have the capacity to sell water to the industry and the steps that would be needed in order for the companies to undertake this activity.
- Four different scenarios were listed, as follows:
  - SRBC active but unused community water system sources, such as reservoirs
  - SRBC inactive and pre-existing community water system sources
  - existing active unused permit capacities i.e. Bellefonte Borough
  - expansion of community water system allocations to permit water sales as a means to infuse greater income for system repairs. Essentially these would be sources with the technical capacity to provide greater quantities but their use is limited by permit.

**NEXT MEETING:** Thursday, December 1, 2011 at 9 a.m. in the county planning office conference room.
ECONOMIC IMPACTS OF MARCELLUS SHALE

Timothy W. Kelsey, Ph.D.
tkelsey@psu.edu
WHAT AFFECTS ECONOMIC IMPACTS?
1. Timing, Scale & Pace Drive Impacts

Three Phases of Natural Gas Development

Development Phase (Short Lived/Labor Intensive)
- Well-pad and Access Road Construction
- Local collection pipeline Construction
- Drilling of the Well
- Fracturing of the Well
- Reclaiming some Disturbance

Production Phase (Long lived/Small & Steady Labor Force)
- Trucking Water and condensate from Well Site
- Monitoring Production
- Occasional Well Work-Overs (partially re-drill/re-frac)

Reclamation Phase
- Dismantle and Reclaim well-sites

Source: Jacquet
Assumes 30 year active life per well
2,500 wells drilled/year pace. Labor requirements based upon MSETC per well workforce estimates

Source: Kelsey, 2011
ECONOMIC IMPACT ANALYSIS
What ‘Change’ to Analyze Is Critical Decision

Analysis involves ‘plugging in’ an income or employment change, and model then estimates how those ripple through the economy – *but the choice of what to ‘plug in’ often isn’t clear!*

- *If income change – how much income, and in which sectors?*
- *If employment change – how many jobs, and in which sectors?*
- *If environmental damage – specifically how much, and costs*
- *Etc.*

Embedded in these decisions – is the change ‘additive’ to the economy, or a substitution?
Economic Impact of Marcellus

• Most widely publicized reports
  – Assume all wages, and lease & royalty dollars stay within Pennsylvania; and that they’re spent immediately
  – Tax estimates are based upon unrealistic assumptions in the economic model; actual observations so far do not support significantly large local or state tax impacts
ECONOMIC IMPACT IN PENNSYLVANIA
1. COMPANY SPENDING
General company spending

- Unable to obtain information from the major gas companies
- Used published company spending information as reported by Considine et al (2009, 2010), adjusted to reflect 2009 activity levels
  
  *Their survey responses accounted for 74 percent of total wells in 2009*

- We cross checked by estimating the per well costs their data implies, and it is consistent with info reported independently
Workforce

• Composition of Workforce
  – 62.7% of workers were Pennsylvania residents
  – 37.3% were non-PA residents

  (Source: Survey by Brundage et al, 2011)

• Estimated two scenarios about non-resident worker spending:
  – 50% of Marcellus earnings spent in PA
  – 75% of Marcellus earnings spent in PA
2. LEASING AND ROYALTIES
Who Receives Leasing & Royalty Dollars?

• No active public record of mineral right ownership (other than deed-by-deed)

• Counties maintain active records of surface ownership

• Study assumed mineral right ownership mirror landownership patterns

  Likely overestimates local ownership:
  1. Many mineral rights were severed generations ago
  2. Some mineral rights owned by businesses
### Percent of Acres in Marcellus Counties, by Ownership Type

<table>
<thead>
<tr>
<th>Ownership Type</th>
<th>All PA counties with Marcellus</th>
<th>Bradford</th>
<th>Fayette</th>
<th>Greene</th>
<th>Lycoming</th>
<th>Tioga</th>
<th>Washington</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Public</td>
<td>17%</td>
<td>8%</td>
<td>13%</td>
<td>4%</td>
<td>33%</td>
<td>25%</td>
<td>4%</td>
</tr>
<tr>
<td>Percent Private</td>
<td>83%</td>
<td>92%</td>
<td>87%</td>
<td>96%*</td>
<td>67%</td>
<td>75%*</td>
<td>96%*</td>
</tr>
<tr>
<td>Percent Private, Owned in County</td>
<td>-</td>
<td>60%</td>
<td>64%</td>
<td>55%</td>
<td>14%</td>
<td>47%</td>
<td>80%</td>
</tr>
<tr>
<td>% Private, Owned Elsewhere in PA</td>
<td>-</td>
<td>22%</td>
<td>14%</td>
<td>31%</td>
<td>49%</td>
<td>19%</td>
<td>9%</td>
</tr>
<tr>
<td>% Private, Owned Out-of-State</td>
<td>-</td>
<td>10%</td>
<td>9%</td>
<td>9%</td>
<td>4%</td>
<td>8%</td>
<td>7%</td>
</tr>
</tbody>
</table>

**Private Ownership Estimates based upon the GIS Analysis**

<table>
<thead>
<tr>
<th>Weighted estimate for All counties with Marcellus*</th>
<th>$$$ goes to the Commonwealth</th>
<th>$$$ Immediately leaves PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighted estimate for All counties with Marcellus*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Private Ownership Estimates Based on GIS Analysis</td>
<td>50.6%</td>
<td>24.7%</td>
</tr>
</tbody>
</table>

*Numbers do not add to the 83% private ownership due to rounding error

Data Source: Conservation Biology Institute’s United States Protected Areas Shape File
Spending & Use of Dollars

Surveyed 1,000 landowners within 1,000 feet of active wells in Bradford and Tioga Counties. Response rate of 50.1%

Leasing Dollars

- 55% dollars were saved in the year received
- 17% spent on taxes
- 9% spent on motor vehicles
- 5% spent on real estate
- 2% spent on home improvements/building
- 4% spent on farming

Royalty Dollars

- 66% were saved in the year received
Allocation of Leasing & Royalty $$$

Followed Land Ownership Pattern (two scenarios)

**Scenario 1**
- 17% to the Commonwealth (General Fund)
- 7.7% to mineral right owners living out-of-state
- 75.3% to PA households (55% of leasing & 66% of royalty dollars saved)

**Scenario 2**
- 17% to the Commonwealth (General Fund)
- 15.4% to mineral right owners living out-of-state
- 67.6% to PA households (55% of leasing & 66% of royalty dollars saved)
ECONOMIC IMPACT RESULTS
C. Total Economic Impact, 2009

Economic Impact in 2009, resulting from 2009 Marcellus Shale development activities

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>If 50% of non-resident employee income stays in PA, and 15.4% of mineral rights are owned out-of-state</td>
<td>23,385</td>
<td>$1,202,855,556</td>
<td>$1,863,290,275</td>
<td>$3,138,994,978</td>
</tr>
<tr>
<td>If 75% of non-resident employee income stays in PA, and 7.7% of mineral rights are owned out-of-state</td>
<td>23,884</td>
<td>$1,225,210,536</td>
<td>$1,897,448,298</td>
<td>$3,195,740,526</td>
</tr>
</tbody>
</table>

Multiplier is 1.86 to 1.90, depending upon scenario
## A. Company Spending & Payroll

Economic Impact in 2009, resulting from 2009 Marcellus Shale development activities

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas Company Non-Payroll Spending</td>
<td>13,626</td>
<td>$729,331,592</td>
<td>$1,193,890,867</td>
<td>$2,145,791,232</td>
</tr>
<tr>
<td>Induced by Natural Gas Company Payroll (50% or 75% non-resident worker spending in PA)</td>
<td>704 – 817</td>
<td>$30,955,834 – $34,850,239</td>
<td>$52,988,161 – $59,674,181</td>
<td>$86,952,840 – $97,772,457</td>
</tr>
</tbody>
</table>
### B. Leasing and Royalty Income, 2009

Economic Impact in 2009, resulting from 2009 Marcellus Shale development activities

<table>
<thead>
<tr>
<th>Impact Type</th>
<th>Employment</th>
<th>Labor Income</th>
<th>Value Added</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Payments to State Government</td>
<td>5,409</td>
<td>$267,725,703</td>
<td>$357,592,541</td>
<td>$477,346,015</td>
</tr>
<tr>
<td>Royalty Payments to State Government</td>
<td>171</td>
<td>$8,817,071</td>
<td>$11,776,661</td>
<td>$15,908,709</td>
</tr>
<tr>
<td>Lease Payments to PA Households (7.7% or 15.4% out of state ownership)</td>
<td>3,360 – 3,733</td>
<td>$161,019,095 - $178,910,105</td>
<td>$238,436,143 - $264,929,048</td>
<td>$398,907,454 - $443,230,504</td>
</tr>
<tr>
<td>Royalty Payments to PA Households (7.7% or 15.4% out of state ownership)</td>
<td>114 – 127</td>
<td>$5,006,261 - $5,575,826</td>
<td>$8,605,902 - $9,585,000</td>
<td>$14,088,728 - $15,691,609</td>
</tr>
</tbody>
</table>
DISCUSSION & IMPLICATIONS
Comparison with Prior Studies

Our findings of 9,371 **direct jobs** due to company spending are consistent with:

- Herzenberg’s (2011) analysis of PA Labor and Industry data (9,288 core jobs due to company spending)

- Brundage, Ladlee et al (2011) workforce assessment based upon company interviews (9,111 direct jobs due to company spending)

*Neither study consider full indirect or induced employment, or jobs due to leasing & royalty spending*
Comparison with Prior Studies

Our findings of 23,385 to 23,844 total jobs (including company spending, & leasing and royalty income) are about half of Considine’s 44,098 estimated jobs.

- Half of difference is due to leasing, royalty and non-resident worker information.
- Remainder likely due to how they were able to adjust IMPLAN for PA company spending.
- Our multipliers are consistent with their multiplier.
Major Limitations of the Study

• Early in Play – economics will be different as the play develops. So results are Short Run snapshot

• Must understand these jobs & income in the context of impacts on human health, environment, social, local government & other impacts

• Could not independently verify industry numbers used
What No One Knows *(But Should Be Known)*

1. Costs of Marcellus Shale development (focus of existing economic studies is job and income creation)

2. Who is benefiting & who is bearing the costs (equity)

3. Long-run implications of Marcellus Shale development
What No One Knows *(But Should Be Known)*

4. What is Actually Occurring

*Comprehensive monitoring and oversight*

1. How much leasing has occurred & where?
2. What percentage of land could be affected?
3. Baseline environmental and health monitoring?
4. Baseline social and community monitoring?
5. Where are the workers from?
6. Who actually owns the mineral rights?
7. Etc.
County Level Economic Impact?

• No published studies so far (but five in progress)

• Much more leakage due to regional and specialized nature of development - hubs doing well

• Clear there is a positive job and income impact... but not in proportion with spending

• When is activity ‘part of the local economy’?

• Distribution question becomes more important to discuss
CONCLUSIONS
Implications

• Economic impacts from development in any year will be spread over multiple years due to saving of leasing & royalty dollars. But where will those dollars be spent?

• Where leasing & royalty dollars go has critical influence on the economic impacts

  Much economic impact is immediately leaving the communities where drilling is occurring

• Local tax impacts of activity appear to be much less than others have suggested