Assessment of "PennEast Pipeline Project Economic Impact Analysis" prepared for the PennEast Pipeline by Econsult Solutions Inc.

Prepared by

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The Econsult Report claims to be an evaluation of the economic effects of the construction and operation of the proposed PennEast Pipeline. It is not an objective analysis. It fails in its stated objective in six respects:

1. It is grossly misleading about the jobs created by the Pipeline construction and continuing operation.
2. It identifies alleged economic benefits but takes no note of substantial costs that could outweigh the alleged benefits, let alone a more realistic value of benefits.
3. It makes extreme assumptions to inflate the alleged benefits.
4. It uses a very partial tool—input output analysis to derive conclusions that fail to take account of the effects that become apparent in a general equilibrium analysis and which work to reduce the effects taken from a partial analysis.
5. The analysis is static and fails to consider alternatives that could provide much greater benefits if the pipeline were not built.
6. The paper does not put its results into context, leaving the impression that alleged benefits would materially improve economic welfare should they be realized when, in fact, they are so small as to be immaterial in the states of New Jersey and Pennsylvania.

Given these deficiencies, the Assessment cannot be taken as a guide to the net benefits of undertaking the pipeline project. And given the grossly misleading statements about job creation, any information provided by the company and its consultants should be carefully checked and assessed before allowing it to influence the decision to permit or not permit construction of the pipeline.

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1. Grossly misleading jobs estimates

The Assessment puts forward a job creation impact of 12,160 jobs in the states of New Jersey and Pennsylvania and 11, 210 jobs in the six county region through which the pipeline would run. Given other company statements and state of the art economic models the job creation could not be more than 2020 to 2525 jobs for a period of about seven month in the six county region. On an annual jobs basis this would put job creation at 1200 to 1500. And many, if not most, of the construction workers would be drawn from across the country where workers with the requisite skills would be available. Few would come from the 6 county region.

- The study does not explain how its job numbers are derived, but there is no way to get from what the company has said elsewhere to anywhere near the figures which appear in the study.
- The company has frequently put forward a figure of 2000 construction jobs for one season—about 7 months. It recently inflated this number to 2500. [Keith Brown, "PennEast Pipeline Economic Study Questioned: is it 12,160 jobs or 2500 jobs?" Times of Trenton, February, 14, 2015]
- Using even the extreme multipliers for indirect effects used in the study for dollar figures would increase the direct jobs number by only 61%. This would mean the largest estimate that one could get would be 4000 jobs for 7 months—only one third of the estimate in the paper. But using more transparent methodology developed at MIT and discussed under point 3 below, the likely job impact would be that put forward above.
- The same gross unexplained amplification of jobs appears when the ongoing effects of the project are presented. Company statements of 21 ongoing jobs in the area become an impossible 98 jobs including alleged indirect effects. Taking the 21 jobs at face value would translate into a total effect in the region of 21 or 22 total ongoing jobs using the MIT multipliers.

2. Failure to consider costs

The benefits estimates omit important costs that would reduce or eliminate the global benefits if they were taken into account and would be a burden on Hunterdon and Northern Mercer Counties in New Jersey where the costs would occur but no lasting benefits would be created.

- Immense burdens on a fragile environment are not even mentioned in the report. This is a first order cost that must be taken into account. It is much

higher than for many pipeline routes because of the efforts that have been made to restore and preserve the Delaware River basin. Other submissions to FERC will go into detail about the environmental impact. It cannot be left aside when one considers the economic impact. The environment has value. Its value is not priced properly in markets because of the well-known "tragedy of the commons", which economists study as externalities. It is not sound economics to consider this route cheap because the price of land is lower per acre than a suburb where a much higher share of the value of the land is its use by landowners and hence is captured in its price. The externality costs are an essential part of any sound assessment of benefits and costs.

- The loss of property values is nevertheless likely to be very large. The communities in Hunterdon and Northern Mercer counties through which the pipeline would run in New Jersey are fundamentally different from those developed areas where economists have found relatively small valuation effects. For more than three decades this area has attracted those looking to preserve a small area of traditional farms and forest in the dense urban corridor between Washington and Boston. Much land has been preserved or protected through a range of programs which have been paid for by contributions and by transfers of tax burden to other landowners in the community. Landowners, both farmers and residents, who have not entered these programs nonetheless value and protect the land that they own. The result is a community in which the value of its special character is capitalized in property prices. Buyers looking for an undeveloped haven would not be attracted to the area where the pipeline runs and this value would be lost. And this pipeline cannot be taken in isolation. Other pipelines and development projects would add up and fundamentally change the character of the entire area.
- The Report claims that tax bases would increase without considering the loss of property value and hence of assessed valuation for real estate taxes that the pipeline would create.
- The Report treats payment to property owners for easements as a benefit with a multiplier impact. But these payments are partial compensation for loss, not a benefit. One could only be confident that full compensation had been provided if the easements were obtained without the threat of eminent domain condemnation proceedings. Even then, this would be a benefit offsetting a cost, not a net benefit. The almost universal opposition of directly affected property owners and their neighbors to this project is clear market evidence that a large part of the cost as anticipated by them is not expected to be compensated. Community meetings held by PennEast have done nothing to assuage this fear.

- The Report lists as a benefit ongoing servicing and maintenance of the pipeline. It ignores the costs to residents from incursion onto their property and to communities from wear and tear on roads and bridges from this activity.

3. Extreme assumptions

The benefit estimates are overstated by the use of extreme assumptions.

- The analytical framework provides estimates of secondary income, as well as the job creation numbers discussed under point 1, that are far higher than other highly regarded work would suggest. The PennEast Study claims an indirect economic impact in the six county region where the pipeline would run that is 60% of the direct spending by PennEast in the region on labor and materials. A hrecent study by professors at MIT and other highly regarded universities, which was presented at a conference held at Princeton University on February 19, 2015 [Acemoglu, Daron et al, "Import Competition and the Great U.S. Employment Sag of the 2000s", http://www.princeton.edu/jrc/conferences/fourth-annual-conference/David-Dorn-AADHP-GreatSag.pdf August, 2014], provides estimates of the indirect effects of manufacturing job changes in county cluster areas that are almost two orders of magnitude lower—0.8% of the impact job change. This study focuses on the direct and indirect job losses resulting from increased imports in county clusters, but the mechanisms for spillover would be the same or less in the case of a construction project like the PennEast Pipeline. The authors examine the reasons for low indirect effects, which did surprise the authors, and hypothesize that job substitution in response to market forces is responsible. But, whatever the explanation, the result is an empirical finding using state of the art econometric techniques, not a theoretical conclusion. One can conclude either that the PennEast estimates are grossly exaggerated or that the methodologies that economists employ to look at this question are so unreliable as to be useless as a guide to policy decisions such as the one that FERC must make regarding the PennEast pipeline. Benefits that cannot be reliably measured must be discounted.
- It is likely that the overstated estimates in the PennEast study arise partly because the full value of the spending in the six county region is counted as a benefit in the study even though most of the value added of what is procured in the region would be elsewhere. The goods sold by local vendors would be overwhelmingly produced elsewhere, including abroad. Food purchased by workers would only in rare cases be locally produced. The vendors would in most cases be businesses, such as McDonalds and

Walmart, with ownership outside the region. Once one allows for these factors, the MIT multiplier estimates become much more plausible than the dollar multipliers in the assessment, let alone the jobs multiplier

- Benefits are amplified by the use of multipliers that assume there is slack in the economy which cannot be absorbed in any other way and that there would be no crowding out of other investments and employment opportunities. At least some other spending and employment would be crowded out by the spending and employment created by the project.

4. A partial analysis

So far as one can determine from the sketchy report, the analysis fails to take account of market induced adjustments that reduce the effects of any exogenous change such as the construction of the pipeline.

- The input-output methodology employed takes no account of prices or the effects that they have. It is a tool that is of policy relevance only in a centrally planned economy such as the former Soviet Union where it was put to use by Gosplan, the central planning department. In any market economic system, an increase in demand changes prices and causes a reallocation of resources that change input-output coefficients. As a general rule, such reallocations result in smaller effects than those calculated using an input-output matrix. In a small region such as the six county area or the two state area that are studied, the likely largest reallocations would take place across the borders of the region. The study does take account of this in one way by noting that, since many of the construction workers would come from outside the region, some of their spending would be done outside the region. But this is only one example of many ways in which resources and spending would be reallocated. For example, if motels are filled with construction workers, how many tourists would be driven elsewhere? If construction workers fill the local restaurants, how many residents would eat at home and how many people who would otherwise have made a trip from nearby counties for a day and a meal would go elsewhere?
- A computable general equilibrium (CGE) model is needed to take account of these factors. The author's experience when at the OECD with a global CGE model to study the effects of alternative policies to mitigate climate change showed that the general equilibrium effects can be very different from partial equilibrium results in sometimes surprising ways. Unfortunately, it is not practical to construct a reliably calibrated CGE model for a small area like the six counties even if those of us concerned

about the project had the time and money. But the comparison of general equilibrium and partial equilibrium results where such work has been done makes it clear that the results put forward in the PennEast report should be taken with a large band of uncertainty. This band of uncertainty should be skewed towards smaller effects, even aside from the other problems identified with the analysis.

- The effects of non-market constraints and distortions would result in further reduction of benefits from those suggested by the partial equilibrium analysis. A CGE model would also fail to account for these. For example, what would the disruption of traffic during construction do to the farm-gate market for produce that is an important part of the regional economy during the summer when the project would be carried out? How would this further affect tourism and day travel to the region for recreation? How much would it reduce the use of the region by recreational bicyclers and motorcyclists? I am unaware of data on the volume of such traffic, but as an avid recreational bicyclist who was attracted to the area by its unmatched suitability for this activity, I meet on every ride many bicyclists and motorcyclists who come from New York and Philadelphia as well as New Jersey and other parts of Pennsylvania to ride. The disruption of their routes would force them to seek other places to ride. Many may not come back.

5. A static analysis without consideration of alternatives

A proper cost benefit analysis must be conducted with respect to alternatives, not with respect to doing nothing. Other submissions will deal in more detail with alternative approaches within a comprehensive energy plan for the region. The comments here deal only in a general way with the critical importance of considering alternatives.

- The potential benefits of this proposed project, setting aside costs, would potentially accrue to Pennsylvania gas producers, end market natural gas and potentially electricity consumers and the construction workers who otherwise would not find employment for one season.
- The Penn East Project is only one way of producing these benefits. They should be considered alongside alternatives.
    - The PennEast proposal is just one of many that would affect the natural gas market in the supply and demand areas and provide construction jobs. If all were built there would be tremendous overcapacity. The ones chosen should not only have benefits that exceed their full costs, but also provide more net benefits than other

proposals. Failure to approach the pipeline approval process in a systemic way would be a policy failure with costs to the industry as well as to the affected communities.

- A review of regional date provided by the EIA, suggests that there is no current annual shortage of natural gas in the Northeast (I unfortunately do not have access to data for the narrower target market), but there are sharp seasonal increase in prices. An alternative to more pipelines to meet seasonal peak demand would be to construct additional storage capacity at the user end of existing pipelines. This option should be included in a systemic review.
- Investment in alternative energy sources (wind, solar, tide and others) for the market area must also be considered. The PennEast pipeline could crowd out such investments.
- The current natural gas supply-demand balance in the targeted consuming region has raised concerns among many of those of us adversely affected that the pipeline is being built in anticipation of LNG export facilities being constructed in New Jersey. This would preserve and perhaps even enhance the benefits to the gas producers, but it would destroy the benefits to regional consumers and potentially leave them worse off. To the extent that FERC takes account of potential exports in its evaluation of PennEast, it must be transparent about this and not ascribe benefits to local consumers if potential exports were to be the basis for justifying this augmentation of natural gas pipeline capacity.

6. Lack of context

The economic benefits, even if taken at face value and offsetting cost are ignored, are almost invisibly small

- The inflated alleged benefits accruing to New Jersey and Pennsylvania during the construction period would be only 0.136% of the economic production of the two states in 2013 [US Department of Commerce Bureau of Economic Analysis].
- The alleged employment earnings would be an even smaller share of one year's labor compensation in the two states in 2012—0.116%
- Looking at jobs in the region, even the implausible estimate given in the Assessment would only add 1.3% to jobs in the six county area for several months. Using the more realistic figures put forward under point 1, based on the company's stated hiring plans, the increase in jobs would be only 0.25%-

-one quarter of one percent. And many of these jobs would be filled by workers form outside the area. So the job impact is not significant for the local economy.

- The alleged indirect and induced benefits, for which the Report gives a state-by-state breakdown, would be concentrated in Pennsylvania. New Jersey, where the environmental, recreational and community costs would be large, only realizes an inflated estimated gain of 0.079% in economic activity, less than half of Pennsylvania's gain.
- These benefits, even if realized would last only through the construction period, which the company has told affected residents would be only one spring, summer and fall.
- The ongoing benefits of the entire project are virtually zero, even taking them at face value--$23 million across the full six county region--against costs that would weigh on the affected landowners, recreational users and communities forever.