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RE: Essay available online at <https://bit.ly/PAPetroComp> — *Questions Remain About Potential Economic Impact of Soon-to-Open Pennsylvania Petrochemicals Complex*

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I recently completed an essay about the soon-to-open Pennsylvania Petrochemicals Complex run by Shell Chemical Appalachia in Beaver County, PA. In that essay, I assert that questions remain about the potential economic impact of the Complex. Estimates of this impact have driven Commonwealth tax incentives and subsidies to support building and operating the Complex.

The essay appears in my blog, *Notes from Pittsburgh* — and “notes” is an apt tag. The blog posting is an online notebook documenting what I have been learning about the Complex. I wrote this essay for my use in other research work, but I believe it contains some observations that might serve a wider audience.

I do not have special training in policy, regulations, legislation, and politics about climate and environment relevant to the Complex. To improve my knowledge, I included in my essay my observations from reporting and the literature I gathered about the Complex.

I do, however, have almost 45 years of experience with economic analysis. In particular, I have completed about 130 economic impact analyses using the same methods employed to estimate the economic impact of the Complex. I use this expertise to critically review a Robert Morris University report, *Updated Economic Impact Analysis: Petrochemical Facility in Beaver County, Pennsylvania*. Many readers of the Robert Morris report might find it as persuasive evidence to answer questions about the potential impact of the Complex on the regional economy.

Robert Morris faculty members created an “independent analysis of the economic impact of the construction and operation of the contemplated petrochemical facility” by examining “direct economic changes in job creation and overall economic output, focusing on the construction and operational phases of the Project.” The core of my essay is my assessment of their analysis.

My essay is relatively long for a blog posting (17k words), considers technical and economic concepts, and focuses on details rather than generalities. Read the complete essay, *Questions Remain About Potential Economic Impact of Soon-to-Open Pennsylvania Petrochemicals Complex*, through the following link: <https://bit.ly/PAPetroComp>¹

I reflect on six main ideas in my essay to render my blog posting to its essentials.

- *Shell has built and will operate the Pennsylvania Petrochemicals Complex.*

After a long planning period, Shell invested in building and operating an ethane cracker to support polyethylene resin manufacturing at the 386-acre Pennsylvania Petrochemicals Complex adjacent to the Ohio River in Potter Township. Shell delayed, resized, or canceled many projects worldwide due to disruptions in worldwide oil and gas markets, even though the Complex project advanced. The Complex begins operation later in 2022.

- *Pennsylvania citizens invested in the Complex.*

The Commonwealth of Pennsylvania offered substantial tax and financial incentives for building and operating the Complex in Pennsylvania — said to be worth \$1.65 million of foregone taxes and tax credits of 5 cents/gallon of ethane purchased by the Complex. These “incentives” are not gifts produced from thin air. They represent expenditures of current or anticipated tax revenue from Pennsylvania citizens. The U.S. Treasury defines tax expenditures as “revenue losses...which allow a special exclusion, exemption, or deduction from gross income or which provide a special credit, a preferential rate of tax, or a deferral of tax liability.” By making these expenditures, the Commonwealth reduced Shell’s start-up costs, underwrites purchases of ethane stock, and eliminates much of Shell’s Pennsylvania tax liability.

- *Although Shell and the Commonwealth invested jointly in the Complex, their investment goals differ.*

Shell aims to sell plastic pellets from the Complex for a profit. The Commonwealth wants jobs, income, business activity, and tax revenue from its investment. Shell’s success is tied to balance sheets and earnings reports, but not necessarily to the social benefits that the Commonwealth seeks, which are costs that Shell seeks to minimize. This asymmetry of goals is no surprise and does not necessarily represent subterfuge by Shell. Shell is simply pursuing its self-interest to benefit its shareholders. Every stakeholder investing in the Complex, including the Commonwealth, must look after its own interests.

¹ Contact Passmore directly to receive the long URL if this shortened URL is rejected by your browser.

- *Commonwealth representatives and officials failed to use due diligence in investing citizens' tax revenues in the Complex.*

The Robert Morris report estimated the regional economic benefits of the Complex but none of the costs. Shell did not pretend to support an economic impact report to meet the public's needs for investment advice. I can find nowhere in the report or in Shell's public statements that Shell meant to offer an inventory of the costs and benefits of building and operating the Complex. This approach taken by Shell is common in proposals seeking public funds for public/private benefit (e.g., sports arena funding, land use, infrastructure construction, natural gas development, competitions for siting corporate headquarters).

No evidence is available that public representatives of the Commonwealth's citizens made their own independent and public assessment of the regional economic impact of the Complex. Almost no public discussion or hearings preceded the passage of legislation committing Commonwealth funds. Instead, Commonwealth representatives and elected or appointed officials accepted, mostly uncritically and with bipartisan enthrallment, the estimates and forecasts from Shell and other petrochemical industry associations to support their decision to invest in the Complex. Who maintained fiduciary duties and responsibility to Pennsylvania citizens in this business decision?

- *Technical matters affect the validity of the Robert Morris report, which has been seen as critical evidence reinforcing the decision made in 2012 to expend tax revenue on the Complex.*

Analyses like those reported by the Robert Morris authors usually run into discrepancies between the data needed and the data available for analysis and, as a result, require practical resolution. The report displays deft craftsmanship to accommodate these difficulties, owing to the authors' educational preparation and experience in tackling impact analyses. Nevertheless, my essay is critical of three issues in the report.

- *Industry analyzed.*

The Pennsylvania Petrochemicals Complex is classified in the Robert Morris report using government-collected data from the "Petroleum Refineries" industry. *I argue that because the primary product of the Complex is polyethylene pellets, output from the Complex probably is best classified within the "Plastic Resin Manufacturing" industry.* Differences in the industry in which the Complex is classified are significant because data from different industries yield different economic impact estimates.

- *Multiplication of Complex impacts.*

Plastic resin manufacturing will directly support jobs at the Complex that pay wages to workers and extract wage taxes for governments. Also, the Complex will purchase goods and services from suppliers, which will indirectly multiply business value, income, jobs, and taxes beyond the Complex. In addition, pay received by workers in the Complex and by workers in the firms that supply the Complex will induce purchases of consumer goods and services.

The direct, indirect, and induced impacts of plastic resin manufacturing differ from impacts that could be realized from petroleum refining, the industry analyzed in the Robert Morris report. This issue is a corollary to the first issue that I identified – the industry in which the Pennsylvania Petrochemicals Complex is misidentified as “Petroleum Refineries.”

- *40-year forecast.*

Forecasted in the Robert Morris report is the potential 40-year economic impact of the Complex. The developer of the economic analysis software applied to produce the Robert Morris report cautions against long-term forecasting. Their software models a short-term stretch in the activity of a static economy, not the dynamics of a working economy operating over time.

I conclude that these 40-year estimates of impact constitute an extension of static input-output modeling, software, and data beyond their known limitations.

- *What’s left, but to learn from the experience?*

Shell’s ship has sailed. Barring unforeseen impediments, the Complex will open for business soon. And, right or wrong, the Commonwealth has codified through legislation its commitment to investment in the Complex. Everything is moving forward.

New public/private partnerships involving tax expenditures will emerge. When future partnerships are weighed, public trust is best served by considering the benefits expected but also the costs involved. My advice to seek fair-minded, comprehensive impact estimates before making public/private investments is not new or uncommon.

Yet, this common advice rarely is followed in the heat of deal-making. Public/private partnerships are marketed as existential imperatives for regional economies. The juices of regional competitiveness flow. Editorials appear.

Political and financial heavies add their voices. Financial decisions are required as time runs out, or else the deal ends fractured. The process is high-pressure and political and shoves aside information that might not support the deal.

Two examples of some costs to consider when evaluating public/private partnerships:

- *Consider externalities.*

Projects like the Complex often are discussed only in fiscal terms. Separately, though, the Complex's hazardous by-products are often addressed by groups seeking to protect the environment in the language of epidemiology, medicine, and biostatistics. Separating this discussion into distinct realms downgrades any perception of financial and economic consequences of hazardous by-products, especially those by-products rarely seen or smelled. Assessment of proposals for public/private partnerships can factor in the monetary costs of by-products.

In economics jargon, an externality exists when producing or consuming a good impacts third parties not directly involved in the production or consumption transaction. A negative externality results in costs that are not paid by the producer or consumer but rather by a third party.

Using the Complex as an example, negative externalities could result from cracking ethane and making plastic resin that, incidental to the process, could compromise the health of third-party Pennsylvania citizens and damage the greater Pittsburgh environment through air and water emissions and land contamination.

Evidence of externalities, by themselves, does not necessarily kill a public/private investment. Having producers or consumers cover the costs of externalities borne by third parties is possible through fees, regulation, cap-and-trade arrangements, or so-called "Pigouvian" taxes on production. Pigouvian taxes shift the costs from society back to the producers of these externalities. These taxes also eliminate market distortions of artificially low production costs caused when some costs are passed along to an innocent third party, often the public.

- *Make a "but for" assessment.*

The assessment of a private project for public funding could borrow productively the "but for" test from criminal law and the law of torts (i.e., "but for the existence of X, would Y have occurred?").

This criterion could have played well in the Commonwealth's decision to partner with Shell. An open question is whether Shell might have decided to relocate to West Virginia, Ohio, and Pennsylvania, if not Beaver County, even without incentives, especially if the region offers unique and desirable business opportunities.

A recent summary of research indicated that, in 9 out of 10 cases, firms receive tax incentives for location decisions that they would have made, *even if no incentive had been offered*. Also, would the location of the Complex in Ohio or West Virginia, rather than Pennsylvania, have proved beneficial for Pennsylvania residents in the region but without citizen's tax incentives expended?

My blog posting serves as a cautionary note about how representatives of the Commonwealth's citizens weigh proposals for using public monies to subsidize innovation by private enterprises. The case for public expenditures and subsidies often rests solely on the public's perception of the positive economic benefits of the innovation derived from formidable, recondite mathematics and software. Seldom identified and analyzed are the total costs and the range of risks and uncertainties that the public must bear when deciding to expend current or potential tax revenue. Proposals touting only benefits present merely a one-sided, incomplete argument.

I am available to discuss my essay.



[I am the sole, independent author of my essay and have not received funds or other support from any entity to complete my essay. I do not mean my essay to advocate or denounce, take a position *pro* or *con* about, the Pennsylvania Petrochemicals Complex, although my narrative in my blog posting carries a critical and evaluative tone. Instead, I wrote my essay in my role as a Pennsylvania citizen to document and clarify the meanings I attached to the political (somewhat) and economic (more so) history, status, and future of the Complex.]