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Office of Natural Gas Regulatory Activities
Office of Fossil Energy
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Dear Secretary Chu:

We thank you and the Department of Energy's Office of Fossil Energy ("DOE/FE") for accepting these comments in reply to the initial comments submitted regarding on NERA Economic Consulting's study (the "NERA Study") of the macroeconomic impacts of liquefied natural gas ("LNG") export on the U.S. economy. We submit these reply comments on behalf the Sierra Club, including its Colorado, Kansas, Michigan, Oregon, Pennsylvania, Texas, and Wyoming Chapters; and on behalf of Catskill Citizens for Safe Energy, Center for Biological Diversity, Clean Air Council, Columbia Riverkeeper, Delaware Riverkeeper, Lower Susquehanna Riverkeeper, Shenandoah Riverkeeper, and Upper Green River Alliance.¹

Having reviewed the initial comments other individuals and organizations submitted on the NERA Study, we stand by and reiterate the concerns raised in the Sierra Club's initial comment. The NERA Study concludes that LNG exports' primary effect will be to transfer wealth from the majority of Americans to the small minority of wealthy corporations that will own natural gas resources or LNG export infrastructure. The purported "net benefit" of this transfer, in NERA's view, is an increase in GDP that even NERA acknowledges is slight. Thus, taken at face value, the NERA Study shows that exports will be *contrary* to the public interest, by any reasonable interpretation of the term.

¹ We have submitted these comments and exhibits electronically, a procedure confirmed as acceptable by Larine Moore at DOE/FE today.

DOE/FE must not, however, take the NERA Study on its own terms. Even on the narrow issue of net GDP impacts, the NERA Study's conclusion is contradicted by the only other available comprehensive model of LNG exports' impacts, conducted recently by Purdue University economists Kemal Sarica and Wallace E. Tyner.² This independent study provides credible evidence undermining the NERA Study's sole finding of a public benefit. More broadly, the NERA Study's focus on net GDP impacts is too narrow in scope, and the NERA Study contains numerous errors, as we explained in our initial filing. The Natural Gas Act public interest inquiry must consider numerous issues ignored by NERA, including the way that increased gas production necessary to supply exports will cause harmful environmental impacts and disrupt communities where gas production occurs. These effects have economic aspects that could have been, but were not, included in the macroeconomic study. On a more technical level, NERA understates the potential volume of exports and domestic gas price increases. These price increases will merely transfer wealth from ordinary Americans and domestic businesses to the relatively few owners of natural gas companies and to foreign investors. Consideration of these additional impacts reinforces the Purdue Study's conclusion that the likely net effect of LNG exports will be a *decrease* in United States GDP, rather than the slight increase NERA predicts.

Nor may DOE/FE sidestep its public interest review obligations on the basis of free trade arguments advanced by other commenters. DOE/FE has a statutory obligation to consider the public interest; trade concerns, if they are considered at all, must be evaluated within this context and balanced against other aspects of the public interest. Moreover, export proponents have not shown that denying export applications would be inconsistent with the U.S.'s obligations under the General Agreement on Tariffs and Trade (GATT) or with underlying free trade principles. GATT recognizes countries' authority to restrict trade when necessary to protect human health or the environment or to conserve exhaustible natural resources. DOE/FE cannot conclude that free trade concerns weigh in favor of exports without exploring the extent to which these provisions apply here.

Finally, we reiterate our concerns regarding DOE/FE's process, both with the NERA Study itself and with respect to export authorization more generally. We previously explained the reasons why NERA's objectivity is suspect, and

² See Kemal Sarica & Wallace E. Tyner, *Economic and Environmental Impacts of Increased US Exports of Natural Gas* (Purdue Univ., Working Paper, 2013) (available from the authors) [hereinafter *Purdue Study*].

DOE/FE still has not provided important information regarding the process by which NERA was selected or work was assigned. Nor has DOE/FE provided the details of NERA's NewERA model or other information necessary to allow external validation of the NERA Study's assessment. As to DOE/FE's own process, DOE/FE has provided inadequate information regarding how it will evaluate the public interest in individual applications, or the steps DOE/FE will take to monitor the impacts of exports if and when exports to non-free trade agreement countries are authorized. Failing to provide this information during the period for public comment on the NERA Study frustrates the purposes of FOIA, the Natural Gas Act, and general principles of administrative law, because withholding of this information limits the public's ability to assess and comment on the relevant documents.

In summary, LNG exports will have many effects that are not considered by the NERA report but are contrary to the public interest. The record contains abundant information demonstrating that these impacts will be significant, as we explain in further detail below.³ DOE/FE cannot move forward without considering them.

I. DOE/FE Cannot Approve Applications without Considering The Environment, Employment/Job Losses, and Other Aspects of The Public Interest Not Examined by The NERA Study

Several commenters request that, now that the NERA Study is complete, DOE/FE immediately approve pending export applications without additional process.⁴ DOE/FE must reject these requests. As DOE/FE has acknowledged elsewhere and as Sierra Club has explained in other filings, the scope of the public interest inquiry extends beyond the macroeconomic factors discussed by the NERA

³ The Center for Liquefied Natural Gas asserts that DOE has already decided that there is no evidence about exports being contrary to the public interest. Comment of Center for Liquefied Natural Gas at 4. This is obviously incorrect. The Center for Liquefied Natural Gas quotes two-year old DOE/FE statements, in an order conditionally authorizing exports from Sabine Pass LNG, where DOE/FE explained that in the record before it in that case at that time, there was insufficient evidence to indicate that the exports proposed there would be contrary to the public interest. DOE/FE is now facing a vastly different factual record and an order of magnitude more proposed exports. As such, these statements have no bearing here.

⁴ See, e.g., Comment of Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC.

Study.⁵ Among other things, DOE/FE must consider proposed exports' impacts on the environment, employment, and communities in which production will occur.

A. Environmental Impacts

Exports will induce additional gas production. EIA and most other commenters predict that between 60 and 70% of the volume of gas exported will be sourced from production that would not have otherwise occurred; EIA's best estimate is that 63% of exported gas will be from induced production.⁶ DOE/FE must reject the American Petroleum Institute's nonsensical argument that DOE/FE may ignore the effects of this production "because natural gas development using hydraulic fracturing is occurring and will continue to occur across the country regardless of whether a single additional export authorization is ever granted."⁷ We agree that *some* production increases are likely to occur regardless of whether exports are approved, but this is irrelevant to DOE/FE's obligation to consider the effects of the *additional* or marginal increase in production that will result from exports. Indeed, American Petroleum Institute itself argues that exports will increase production.⁸ American Petroleum Institute offers no explanation as to why it believes DOE should consider production increases in the context of jobs but not in the context of environmental impacts.

As Sierra Club's initial comment explained, the additional production that exports will induce will have significant environmental impacts.⁹ These impacts will be particularly severe if that production is conducted in accordance with current industry practice and lax regulatory frameworks. The Secretary of Energy Advisory Board (SEAB)'s subcommittee on shale gas identified a number of gaps in existing regulations and industry practice, and few, if any, of these gaps have been filled.¹⁰

⁵ *Accord* Comment of the American Public Gas Association at 7, Comment of Dow Chemical Company at 2.

⁶ EIA Study at 10.

⁷ Comment of American Petroleum Institute at 22-23.

⁸ *Id.* at 5.

⁹ Comment of Sierra Club at 29-52.

¹⁰ Comment of Sierra Club at Ex. 56 (DOE, Shale Gas Production Subcommittee First 90-Day Report (2012)).

The environmental impacts of gas production, and of the failure to regulate it, must be factored into assessment of exports' net and distributional impacts. In terms of net impacts, the economic cost of environmental harm, such as the cost of increased air emissions, erodes (if not entirely erases) the net benefit NERA purports to find. Although DOE/FE cannot limit its consideration of environmental impacts to those that are easily monetizable, DOE/FE must, at a minimum, apply available tools to estimate the economic impacts of environmental harms. For example, under the USREF_SD_LR scenario, NERA predicts 2.19 tcf/y of exports in 2035, with a \$2 billion GDP increase relative to the baseline.¹¹ Using EIA estimates of the share of exports that will result from induced production (63%) and EPA's current estimate of the leak rate for gas production (2.4%), the Sierra Club estimated that 2.19 tcf/y of exports will release an additional 689,000 tons of methane into the atmosphere each year.¹² Using a conservative global warming potential for methane of 25 and EPA's social cost of carbon price of \$25/ton, the social cost of the production-side methane emissions alone will be \$430,625,000,¹³ displacing more than 20% of the GDP increase NERA predicts under this scenario. Liquefaction and processing of natural gas further adds to greenhouse gas emissions. Other environmental impacts also impose monetizable costs, which must be added to any calculation of net impacts and thus further erase the claimed benefit. Moreover, as we explain below, the Purdue Study indicates that NERA has overstated the likely GDP benefit, such that even if environmental costs are excluded from consideration, the net GDP impact of exports would be negative. If those studies are correct, acknowledging environmental impacts makes a bad deal even worse.

Environmental impacts also aggravate the distributional inequity predicted by the NERA study. Environmental costs are borne by the public at large. Providing a market for increased gas production therefore effectively transfers wealth from the public, which suffers environmental harm as a result of increased production, to the production companies, which realize profits from this production. This effective wealth transfer must be considered in addition to the purely monetary wealth transfer identified by NERA.

¹¹ Compare NERA Study at 179 with Comment of Sierra Club, Ex. 56 at 186.

¹² See Comment of Sierra Club at 31-32 for methodology.

¹³ *I.e.*, (25)(25)(\$689,000). For more background on these estimates, see Comment of Sierra Club at 33-34.

In light of gas production's environmental impacts, even some export proponents have argued that the environmental impacts of gas production must be reduced before exports occur. Notably, a report by Michael Levi of the Brookings Institution concludes that the benefits of gas exports outweigh the risks and costs *if* "proper steps are taken to protect the environment."¹⁴ Levi concludes that "environmental risks arising from natural gas production would . . . rise due to new production for exports," and that safe management of these risks would not happen without further action.¹⁵ Levi recommended that, for a start, the environmental practices recommended by the SEAB should be required prior to exports.¹⁶ In this proceeding, the Bipartisan Policy Center explicitly endorses Levi's argument, arguing that exports will be in the public interest only if environmental impacts are addressed.¹⁷ Numerous other commenters, however, cite Levi's study for the purported conclusion that exports will be in the public interest without acknowledging Levi's qualification that environmental impacts must be addressed first.¹⁸ Sierra Club disagrees with Levi's conclusion that exports will be in the public interest provided that gas production is more carefully regulated. At a minimum, however, DOE/FE must reject any implication that Levi's report indicates that exports would further the public interest even if production occurs under the status quo.

Moreover, although regulations that limit gas production's environmental impacts may increase the cost of production and thus gas prices, such price increases have a markedly different impact on the public interest than price increases caused by demand for exports. What the public "buys" when it experiences a price increase attributable to environmental regulation is increased environmental protection that would otherwise have been caused by production of the gas being used. Regulation also avoids emergency cleanup, public health care, and emergency costs resulting from environmental harm related to drilling, ultimately saving public tax dollars. In contrast, when prices increase because of exports, the public doesn't receive anything in exchange for paying increased prices. Indeed, whereas higher prices resulting from less environmentally destructive practices lessen the environmental impacts borne by the public,

¹⁴ Michael Levi, *A Strategy For U.S. Natural Gas Exports*, at 6 (June 2012), available at http://www.hamiltonproject.org/files/downloads_and_links/06_exports_levi.pdf and attached here as exhibit 1.

¹⁵ *Id.*

¹⁶ *Id.* at 21.

¹⁷ Comment of Bipartisan Policy Center at 2.

¹⁸ *See, e.g.*, Comment of American Petroleum Institute at 15.

higher prices resulting from competition with exports increase the environmental harm the public suffers, by stimulating increases in overall production and consumption and thus increases in environmental impacts such as emissions of greenhouse gases and traditional air pollutants. Similarly, when the public pays for price increases in response to purely domestic demand growth, the public “buys” the benefits of a strong manufacturing industry, but when prices increase because of export, the public receives no analogous benefit.

Thus, DOE/FE must consider the environmental impacts of exports, including the effects of induced gas production and of liquefaction, in its assessment of the public interest. DOE/FE must consider the alternative of withholding approval of export authorizations until additional regulation—such as that recommended by the SEAB—is in place to ameliorate these impacts.¹⁹ Even under such an alternative, however, DOE/FE would need to consider the effects of remaining environmental impacts, which, though diminished, would still weigh against the public interest.

B. Employment and Job Losses

LNG export proponents and opponents generally agree that exports will have significant effects on domestic employment and that employment effects are a key component of the public interest, but that the NERA Study did not directly consider this issue.

There is an apparent consensus among informed observers that if exports are approved, there will be additional jobs in the fields of gas production and terminal construction, but that the resulting increase in gas prices will eliminate

¹⁹ Contrary to American Petroleum Institute’s contention, DOE/FE plainly has authority to deny export applications on the basis of environmental impacts. Comment of American Petroleum Institute at 23. American Petroleum Institute rests on *Department of Transportation v. Public Citizen*, 541 U.S. 751 (2004). *Public Citizen* held that “where an agency has *no ability* to prevent a certain effect due to its limited statutory authority over the relevant actions, the agency cannot be considered a legally relevant ‘cause’ of the effect,” and that the effect could be excluded from NEPA analysis. *Id.* at 770 (emphasis added). There, where the agency had “no discretion to prevent the entry of Mexican trucks, its [environmental assessment] did not need to consider the environmental effects arising from the entry.” *Id.* Here, DOE/FE unquestionably has the authority and duty to consider environmental impacts in its public interest analysis, the authority to deny export authorization on the basis of environmental impacts, and thereby to prevent the environmental harms associated with induced production. Accordingly, *Public Citizen* does not support American Petroleum Institute’s argument.

jobs in other industries, such as manufacturing, that are highly energy dependent. The NERA Study acknowledges both of these effects.²⁰ NERA did not, however, provide a sufficient analysis of their absolute or relative magnitudes. As the Synapse Report provided by Sierra Club explained, because of the NewERA model's assumption of full employment, "the potential economic impact that is of the greatest interest to many policymakers, namely the effects of increased LNG exports on jobs, cannot be meaningfully studied with NERA's model."²¹ Numerous export proponents also criticize the NERA Study's assumption of full employment.²² Accordingly, DOE/FE cannot approve the pending export applications without conducting a study capable of examining the job creation or destruction impacts of LNG exports.

If DOE/FE were to make a decision on the available evidence, DOE/FE would have to conclude that LNG exports will cause a severe net *decrease* in domestic jobs. As Sierra Club explained in its initial comment, although the NERA Study did not directly assess job impacts, it attempted to predict impacts on aggregate labor income, and these predictions can be used to evaluate gain or loss in "job equivalents."²³ Considering the increase in labor income in sectors benefited by exports (gas production and terminal construction) and the decrease in labor income in other sectors, NERA predicted a loss of labor income equivalent to 36,000 to 270,000 jobs per year.²⁴ This is the only economy-wide discussion of job impacts in the record, and it provides a strong indication that exports would be contrary to the public interest.

Although many export applicants have provided studies purporting to show job growth, none of these studies attempts to account for decrease in employment in the industries that will be negatively affected by increased gas prices. For example, in its initial comments, Golden Pass Products disputes the NERA Study's conclusion that "higher energy costs do create a small drag on economic output in the U.S. so that total worker compensation declines."²⁵ Golden Pass Products' basis for disputing this conclusion is the contention that its own export proposal would generate "tens of thousands of direct and indirect jobs across the U.S." as a result of construction and operation of the needed export facility and

²⁰ NERA Study at 60-61, 65.

²¹ Comment of Sierra Club at Ex. 5, 15.

²² See, e.g., Comments of Cameron LNG at 12, Cheniere Energy at 5, ExxonMobil at 2.

²³ Comment of Sierra Club at 8, Ex. 5, 4-5.

²⁴ *Id.*

²⁵ Comment of Golden Pass Products at 3 (quoting NERA Study at 77).

production of the gas required for export.²⁶ But Golden Pass Products and the economic study it relies on are completely silent as to the countervailing effects of jobs lost in other industries as a result of increased gas prices. Accordingly, the study Golden Pass Products submitted provides no basis for DOE/FE to conclude that exports will result in net job growth. As Sierra Club has explained in the individual dockets for other pending export applications, all of the studies applicants have submitted regarding employment impacts suffer this defect.²⁷

Finally, DOE/FE must reject the various assertions that jobs in terminal and liquefaction facility construction provide a substitute for lost manufacturing jobs.²⁸ It is possible that, from the perspective of an individual employee, the two may be comparable on a short term basis,²⁹ but it is extraordinarily unlikely that the number of facility construction jobs created will equal the number of manufacturing jobs lost. This is especially true over the 20-year lifetime of the export authorizations requested, because facility construction jobs are by nature temporary and will span only the beginning few years of the exports.

The NERA Study's failure to consider job impacts is a glaring gap in the public interest analysis, and DOE/FE must address this gap before approving any of the pending export applications. The best evidence in the existing record regarding net job impacts, however, is Sierra Club's application of NERA's own "job equivalent" methodology to the NERA Study's labor income forecasts, and this evidence strongly indicates that the volumes of exports considered by the NERA study will cost between 36,000 and 270,000 jobs annually.

C. Resource Extraction Hurts, Rather than Benefits, The Communities in which It Occurs

On a macroeconomic level, exports will increase output of the gas production industry while reducing output of many manufacturing and other energy intensive industries. Similarly, in terms of aggregate employment figures, exports will create some jobs in gas extraction but eliminate jobs in other industries. It is therefore understandable for the NERA Study and many

²⁶ *Id.* at 4.

²⁷ The job creation arguments submitted by export applicants suffer numerous additional flaws, as Sierra Club has explained in the individual dockets.

²⁸ See, e.g., Comment of American Petroleum Institute at 5-6.

²⁹ Of course, even a shift between comparable jobs could have a net adverse effect on the public interest, due to the social and economic costs of displacing workers.

commenters to approach the public interest analysis by examining whether the benefits realized by increased gas production outweigh the costs felt by other industries, whether these costs and benefits are measured in industry profits or jobs supported.

On a community level, however, it would be inappropriate for DOE/FE to conduct a simplistic comparison of the “benefits” of increased production and the harms of reduced energy intensive industry. Empirical evidence indicates that in the long term, resource extraction hurts, rather than helps, the communities in which it occurs.³⁰ Many individuals living in communities currently experiencing America’s shale gas boom submitted initial comments on the NERA Study testifying to the degradation their communities have experienced as a result of shale gas extraction. DOE/FE must ensure that the infrastructure costs, population declines, and other symptoms of the “resource curse” that often affects these communities are accounted for in whatever framework DOE/FE ultimately uses to assess the public interest. The NERA Study is not up to this task.

II. Price Impacts

Turning to questions the NERA Study purports to answer, the effects of LNG exports on domestic gas prices are a key aspect of the Natural Gas Act’s public interest inquiry. Sierra Club previously explained that the NERA Study understates the potential magnitude of these increases, and comments from other entities support Sierra Club’s argument on this point. Industry commenters further support the conclusion that exports, if approved, are likely to ramp up quickly, risking domestic price spikes.

A. LNG Exports Will Raise Domestic Gas Prices Without Providing Corresponding Social or Environmental Benefits

As a threshold issue, all available evidence indicates that exports will increase gas prices. DOE/FE therefore must reject assertions by some export proponents, such as the American Exploration and Production Council, that the demand created by exports is necessary to avoid a decline in production that would lead

³⁰ Comment of Sierra Club at 13-25.

to even greater price increases.³¹ No study or modeling submitted by export applicants supports this argument. Instead, every model and forecast that compares future worlds with and without U.S. LNG exports concludes that U.S. gas prices will be higher with exports, and that prices will increase as export volumes increase. Indeed, even the American Exploration and Production Council apparently endorses the NERA Study's price forecasts—which predict that exports will increase prices relative to a baseline future without exports—on the page prior to the group's assertion that exports will lower prices.

B. The NERA Study Overstates Potential Market Limits on Exports, and Thus Underestimates The Potential Ceiling on Domestic Price Increases

The NERA Study concludes price increases will be self-limiting because exports will only make economic sense when regasified U.S. LNG can be had in receiving markets for less than the cost of alternative supplies. In other words, the spread between prices in the U.S. and receiving markets must be greater than the cost of liquefying, transporting, and re-gasifying LNG. Thus, the NERA Study concludes that there will be a market ceiling on the extent to which exports can cause domestic gas prices to rise: exports should drive U.S. prices above the highest price in a receiving market minus the price of transporting gas to that market. The NERA Study explains that at present, the highest priced markets are Japan and Korea, and that the total costs to deliver gas to Asian markets are \$6.89/MMBtu to China and India and \$6.64/MMBtu to Korea and Japan.³²

For reasons Sierra Club previously explained, the NERA Study's projected ceiling on domestic prices is too low. First, NERA overstates transportation costs. The NERA Study assumes that all U.S. export terminals will be in the Gulf Coast, and estimates transportation costs accordingly. Two facilities, however, have been proposed for the West Coast. One of these, proposed by Jordan Cove Energy Project, filed comments explaining that its transportation costs to Japan were significantly lower than those assumed by the NERA Study. Although Jordan Cove Energy Project would face higher facility construction and thus liquefaction costs than Gulf Coast facilities, Jordan Cove asserts that, in aggregate, its total processing and transportation costs will be \$0.44/MMBtu

³¹ Comment of American Exploration and Production Council at 2.

³² NERA Study at 90, Figure 62 (figures here exclude the "Regas to city gate pipeline cost").

lower than the estimates used by NERA.³³ Accordingly, insofar as the cost of processing and transporting LNG sets the ceiling on price increases resulting from exports, that ceiling could be \$0.44/MMBtu higher than the NERA Study estimates. \$0.44/MMBtu represents roughly 5 to 10% of NERA's predicted 2035 wellhead gas prices, meaning NERA may have significantly underestimated the price range within which exports will occur.³⁴

Another factor that causes the NERA Study to underestimate the potential volume of exports, and thus the magnitude of price increases, is the failure to acknowledge the effects of "take or pay" contracts. Under these contracts, importers agree to pay a fee to reserve terminal capacity regardless of whether that capacity is actually used to liquefy and export gas. These contracts are generally for the full term of the export authorization, *i.e.*, 20 years. Various foreign commenters state that they have already entered these long-term contracts with export applicants.³⁵ Accordingly, these importers have already sunk a portion of the cost of liquefaction, and could minimize or disregard this cost when deciding whether to import gas once facilities enter operation.

C. Exports Will Likely Increase Domestic Gas Price Volatility

Numerous commenters have argued that exports will decrease gas price volatility, but the available evidence indicates that, if anything, exports may lead to an increase in volatility as a surge in exports ramps up quickly.

There is reason to think that exports will *increase* domestic gas price volatility in the short term. Both EIA and the NERA Study found the highest increases in domestic gas prices in scenarios in which exports were phased in rapidly. Numerous export proponents have argued that it is imperative that the U.S. move quickly to establish exports before other sources of gas come online.³⁶ These other competitive sources of gas could be expanded LNG export operations from other countries such as Australia or Canada, development of additional international pipeline capacity, or development of unconventional gas reserves in countries that would otherwise seek to import US LNG. In light of these statements about the need and intention to proceed quickly, it is quite

³³ Comment of Jordan Cove Energy Project at 2.

³⁴ NERA Study at 50.

³⁵ Comment of Japan Gas Assoc. (explaining that Japanese firms already have a take-or-pay agreement with Freeport LNG and are close to concluding a similar agreement with Dominion).

³⁶ Comment of Freeport LNG Expansion, L.P. and FLNG Liquefaction, LLC.

possible that exports will ramp up as quickly as DOE/FE allows. If this happens, demand may increase more rapidly than production, leading to periods of increased scarcity and price spikes, as the EIA predicts.³⁷

On the other hand, there is little evidence, if any, that exports will meaningfully reduce volatility. Export applicants have argued that increasing stable gas demand resulting from exports will induce domestic production and provide for a broader, less volatile market.³⁸ The Institute for 21st Century Energy, for example, argues that gas prices were particularly volatile when Congress limited consumption of gas by industrial and electricity generating users, and that volatility was reduced once these sectors began consuming gas.³⁹ Even if exports do not occur, however, these sectors will present exactly the type of demand growth that exports would provide. Gas prices are already expected to rise due to increasing consumption in the industrial and electricity sectors, and allowing exports would drive prices up further. Accordingly, to the extent that exports might marginally reduce volatility, they would do so by resulting in higher, if slightly more stable, gas prices.

Fundamentally, even if exports reduce volatility, this effect is almost certain to be less important than overall increases in price. Any reduction in volatility will be the result of raising prices to eliminate troughs. On the available record, DOE/FE cannot conclude that any such effect will meaningfully benefit the public interest.

D. Use of Updated Annual Energy Outlook Demand and Supply Forecasts

As Sierra Club and many others noted in the initial comments, the NERA Study used outdated predictions of domestic natural gas demand, relying on the EIA's 2011 Annual Energy Outlook instead of the 2012 data available at the time NERA undertook the study or the early release 2013 forecast. Greater baseline demand generally entails greater price increases for any given level of exports. Other commenters counter that, although more recent Annual Energy Outlooks forecast higher domestic demand, they also forecast baseline higher domestic production, which would generally tend to lower the price increase caused by any given volume of exports.

³⁷ *Accord*, Comment of Dow Chemical Corp. at 5, 16.

³⁸ *See, e.g.*, Comment of Center for Liquefied Natural Gas, 15.

³⁹ Comment of Institute for 21st Century Energy, 2-3.

In light of the significant changes between the 2011 and 2013 Annual Energy Outlooks, DOE/FE should revisit the price impacts analysis. We recognize that new data and forecasts will regularly be released, such that there are limits to DOE/FE's ability to always use the *most* current information. In light of the importance of this issue and the availability of newer data during the period in which the NERA Study was conducted, however, NERA's decision to rely on the 2011 Annual Energy Outlook is unreasonable.

E. Conclusion Regarding Price Impacts

As we explain above and in prior comments, LNG exports will increase domestic gas prices, and the price increases rise with export volumes. The NERA Study overestimates the costs of moving gas to foreign markets and disregards the long-term nature of export agreements, leading NERA to understate potential export volumes. NERA therefore underestimates potential domestic gas price increases. The following section discusses the effects increased prices will have on the domestic economy.

III. Macroeconomic Impacts

The NERA Study's conclusions regarding macroeconomic impacts are stark: exports will decrease household incomes for the majority of Americans, effectively transferring wealth from low and middle class families to gas production companies and owners of liquefaction infrastructure. These deleterious effects are corroborated by the Purdue Study, which found similar impacts. Notwithstanding these distributional effects, the NERA Study concluded that exports would be a net benefit to the U.S. because the benefits realized by gas companies would create a slight overall increase in GDP. This conclusion is undermined by the Purdue Study, which concludes that exports will cause a net decrease in GDP.

As explained in Sierra Club's initial comment, the distributional effects of LNG exports are resoundingly contrary to the public interest; there are multiple reasons to doubt the NERA Study's conclusion regarding aggregate GDP impacts; and even if NERA were correct about effects on the overall GDP, an increase in GDP does not itself demonstrate furtherance of the public interest. These arguments are generally supported by the initial comments submitted by other parties.

A. Exports Will Transfer Wealth from Middle and Low Income Families to Gas Production and Exporting Companies

The NERA Study concluded that Americans who do not own stock in companies involved in gas production or LNG export—*i.e.*, the overwhelming majority of Americans—will be made worse off by exports. None of the initial comments on the NERA Study call this conclusion into question. This regressive redistribution of wealth is highly detrimental to the public interest.

In an apparent attempt to minimize the impact of this effect, the NERA Study argues that the benefits realized by gas production companies are realized by “consumers” generally, because “[c]onsumers own all production processes and industries by virtue of owning stock in them.”⁴⁰ As Sierra Club explained, however, only about half of American families own any stock at all, and only a small subset of stock owners own stocks in the gas production companies that will benefit from exports.⁴¹

Moreover, many of the economic benefits of exports will not accrue to U.S. residents. Sierra Club’s initial comment demonstrated extensive foreign investment in U.S. liquefaction capacity.⁴² Japan’s Osaka Gas and Chubu Electric utilities provide additional evidence on this point, expressing their belief that foreign investors (presumably including these companies) will make significant additional investments in U.S. liquefaction facilities.⁴³ A result of these investments will be that, contrary to the NERA Study’s assumptions, a share of the profits realized by liquefaction operators will accrue to foreign investors.⁴⁴ Moreover, while Sierra Club’s initial comment only discussed foreign ownership in the context of liquefaction and terminal facilities, other commenters demonstrate that foreign entities are also investing directly in natural gas production. India’s GMR Energy Limited notes that Indian companies have already taken stakes in production of Marcellus and Eagle Ford Shales.⁴⁵ Foreign investment rebuts the NERA Study’s assumption that profits from gas production will accrue solely to U.S. consumers.

⁴⁰ NERA Study at 55 n.22.

⁴¹ Comment of Sierra Club at Ex. 5, 9-10.

⁴² *Id.*

⁴³ Comment of Chubu Electric Power Co.

⁴⁴ *See* Comment of Sierra Club at Ex. 5, 9.

⁴⁵ Comment of GMR Energy Limited.

B. The NERA Study Understates Exports' Effects on Domestic Industry and Is Overly Optimistic about Changes in Gross Domestic Product

Contrary to the NERA Study's conclusions, it is unlikely that LNG exports will increase GDP.

Although the NERA Study concludes that LNG exports will slightly increase GDP, this conclusion is contradicted by the recent independent Purdue Study.⁴⁶ Purdue's Prof. Tyner submitted a summary of this study as an initial comment, and Sierra Club discussed this work previously. The Purdue Study concludes that aggregate effects on GDP will be negative, although the two studies agree that in absolute terms, effects will be small. The Purdue Study explains that its results differ from the NERA Study's because the former predicts larger price increases as a result of exports, and thus larger declines in energy intensive sectors.⁴⁷ The Purdue Study is built on publicly available models and was conducted by independent researchers, making it every bit as credible as the NERA Study. Accordingly, DOE/FE cannot simply credit the NERA Study's conclusion that exports will provide a slight increase in GDP as a basis for concluding that exports are in the public interest.

Furthermore, both the NERA and Purdue Studies ignore many effects that will lower overall GDP. The Purdue Study acknowledges this omission, explaining that both its analysis and the analysis used in the NERA Study understate the impacts on energy intensive industries such as manufacturing, because these domestic industries' success depends not just on their energy costs, but also on the relative difference between what domestic industry must pay for gas and energy and what foreign competitors pay. Because LNG exports will likely simultaneously raise domestic energy costs while lowering foreign costs, exports will inhibit domestic industry's ability to compete in a global marketplace. Nor does either analysis account for the environmental harms, "resource curse" effects, or other issues described in part I, above.

We also reiterate our concerns—shared by Congressman Markey, Dow Chemical, and other commenters—about the NERA Study's modeling (or lack thereof) of effects on other industries.⁴⁸ Sector-specific modeling of exports'

⁴⁶ See *supra* n.2.

⁴⁷ Purdue Study, *supra* n.2, at 4.

⁴⁸ Comment of Sierra Club, Ex. 5, 5-6.

impacts can be reasonably obtained, but the NERA Study does not provide this analysis. The NERA Study asserts that adversely affected industries are not “high value-added,” but does not support this assertion by modeling the systemic impacts of impacts to these industries. The NERA Study further assumes that industries in which energy expenditures constitute less than 5% of total costs will not be significantly adversely affected by exports,⁴⁹ but it appears that other industries may likely be affected.

In light of these concerns, this is another area in which DOE/FE should seek to ground its public interest analysis in empirical work, including case studies. As Alcoa suggests in its comments, Australia’s recent experience with LNG export can provide a useful starting point for analysis. Alcoa states that domestic gas prices in Western Australia, which currently exports LNG, are at least double U.S. prices, despite extensive Australian natural gas resources.⁵⁰ We encourage DOE/FE to investigate the Australian experience with LNG export for calibration of, or in addition to, use of economic models and forecasting, before deciding whether to approve LNG export proposals.

IV. Trade

Numerous commenters invoke the United States’ obligations under the General Agreement on Tariffs and Trade (GATT), as well as an underlying commitment to free trade principles, as grounds for approving LNG exports. DOE/FE’s statutory obligation is to determine whether exports are in the public interest, and trade considerations, assuming they apply at all, are merely one factor DOE/FE can consider in this analysis. Insofar as trade issues are pertinent, we note that commenters have overstated the extent to which denying export applications would conflict with trade policy. Even if there is a conflict, however, free trade arguments at most factor into, and do not displace, the public interest inquiry required by the Natural Gas Act.

The GATT preserves the United States’ authority to restrict LNG exports in these circumstances. Specifically, the GATT states:

⁴⁹ See, e.g., NERA Study at 68.

⁵⁰ Comment of Alcoa, 2, 4

[N]othing in this Agreement shall be construed to prevent the adoption or enforcement . . . of measures: . . . (b) necessary to protect human, animal or plant life or health; [or] . . . (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.⁵¹

As explained above and in prior comments, exports will cause significant harm to human health and the environment. Under the Natural Gas Act, DOE/FE can and should deny export applications on this ground. In light of GATT's explicit recognition of signatories' power to restrict exports in these circumstances, DOE/FE must reject the assertion that denying export authorizations would violate the United States' GATT obligations.

Even if denying applications could potentially brush against free trade principles, this would be at most just one factor to consider in the public interest analysis. Congress has commanded DOE/FE to evaluate proposals for exports to countries lacking a bilateral free trade agreement on a case by case basis. If DOE/FE were to categorically determine that all exports to WTO nations were consistent with the public interest DOE/FE would, among other errors, disregard the Congressional command to engage in case-by-case inquiry and thereby fail to give effect to the terms of the governing statute. Under the existing statutory framework DOE/FE can, at most, attempt to assess on a case-by-case basis whether the benefits of adherence to free trade principles in that particular case, together with other factors furthering the public interest, outweigh the effects that will be contrary to the public interest.

V. DOE/FE Process

Finally, we have a number of concerns regarding the process by which DOE/FE has addressed the question of whether to authorize LNG exports, as well as the process DOE/FE will use going forward.

As the above concerns amply demonstrate, in making its public interest determinations regarding individual export proposals, DOE/FE must confront a

⁵¹ General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 at Art. XX.

wide range of issues addressed inadequately, if at all, by the NERA Study. We join with other commenters, including Dow Chemical Corporation, in requesting that DOE/FE explicitly articulate the framework it will use in making these determinations. Development of this framework would most sensibly take place in the context of a separate rulemaking.

Similarly, we remind DOE/FE that it must consider the cumulative environmental, economic, and other impacts of LNG exports; DOE/FE cannot consider individual applications in isolation. Regarding environmental impacts, the best way to consider these impacts is through preparation of a programmatic environmental impact statement (EIS), pursuant to the National Environmental Policy Act, 42 U.S.C § 4332(c). Whether conducted under the auspices of a programmatic EIS or otherwise, DOE/FE cannot approve any individual application until it has considered the cumulative impacts of all foreseeable applications. Although export proponents have argued that only a subset of proposed export projects are likely to be constructed, DOE/FE may not decline to consider the impacts of all pending proposals on that basis. Moreover, DOE/FE must recognize that the mere existence of a proposal or authorization of exports has immediate effects on energy markets and dependent industries, as other players adjust their expectations regarding the potential for exports. DOE/FE must acknowledge that authorization of a proposal has important effects even if that authorization is not put to use.

DOE/FE should also articulate the standards it will use in retaining jurisdiction over exports after they are approved. In the Sabine Pass proceeding, DOE/FE stated that it would continue to exercise jurisdiction over the approved exports, and would revisit the authorization if subsequent events demonstrated that exports had become contrary to the public interest.⁵² If DOE/FE wrongly concludes that exports are in the public interest now, DOE/FE should nonetheless provide examples of the types and severity of circumstances that would cause DOE/FE to revisit this determination and revoke approval.⁵³

⁵² DOE/FE Order No. 2961 at 31-33.

⁵³ DOE/FE's ongoing supervisory authority is not a substitute for making a proper initial public interest evaluation. DOE/FE must reject the Center for Liquefied Natural Gas's apparent suggestion that DOE/FE approve the pending applications now without attempting to predict their consequences, with the plan of taking action once adverse impacts manifest themselves. Comment of Center for Liquefied Natural Gas, 6. The Center for Liquefied Natural Gas asserts that "The role of the regulator is . . . not to be a predictor of future events," and that DOE should not "predict future events," presumably meaning price increases and effects on the American

Finally, we reiterate our concerns about the lack of transparency regarding DOE/FE's selection of NERA, as well as the quality of the NERA Study itself. As Sierra Club previously explained, NERA in general, and study author Dr. Montgomery in particular, have a history of activities that raises serious questions about their objectivity. These questions are made even more pertinent by the dearth of information regarding DOE/FE's solicitation and selection of NERA and the modeling and data used by NERA in generating this study, including information regarding the underlying NewERA model. DOE/FE has refused to make this information available for review during the public comment period.⁵⁴ For a study of this importance, however, DOE should have provided this information in order to support full public participation and rigorous peer review, and to inspire public trust in the study's conclusions.

VI. Conclusion

Exports will cause severe environmental harms, eliminate more jobs than they create, disrupt communities with the boom/bust cycle of resource production, redistribute wealth from the lower and middle classes to wealthy owners of gas production companies, and have broad effects on the output of various sectors of the American economy. The NERA Study disregards nearly all of these considerations in concluding that exports will be a "net benefit" to the United States. DOE/FE's review of the public interest cannot be so constrained. Initial comments on the NERA Study submitted by other parties only reinforce the arguments advanced in Sierra Club's initial comment.

On the record before it, DOE/FE cannot conclude that any of the pending export applications would be in the public interest. DOE/FE must begin a transparent process that will acknowledge and evaluate all of the proposed LNG exports' impacts on the public interest.

economy, "during the authorization proceeding for projects with lifespans in excess of twenty (20) years each." *Id.* The Center for Liquefied Natural Gas's assertion that regulators should not predict impacts in the domains they regulate, including the impacts of that regulation, severely misunderstands the role of a regulator. Common sense and general principles of administrative law are that when such predictions are available, the agency must seek them out and use them to inform its actions.

⁵⁴ Sierra Club, *Freedom of Information Act Request Re: LNG Export Studies* (Jan. 22, 2013), attached as exhibit 2; DOE Interim Response to HQ-2013-00423-F (Jan. 24, 2013), attached as exhibit 3; Sierra Club, *Freedom of Information Appeal, re: HQ-2013-00423-F* (Feb. 22, 2013), attached as exhibit 4.

Sincerely,

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