



the literature a clear general definition of ‘externality’<sup>1</sup>, however. In broad terms, externalities are indirect effects, positive or negative, of an activity or effects on a third party.<sup>2</sup> Even when externalities are so defined, however, it is unclear what analysis Condition 38 requires. If Condition 38 is intended to require that SRP calculate and monetize every benefit or cost to the public of any and all potentially reduced emissions from Santan, such an analysis would be a vast undertaking. And Condition 38 would require the analysis be performed every five years.

Apart from the scope of the analysis intended by Condition 38, there are substantial questions about how any such analysis could be done, including the lack of “nationally-recognized values” that could be used. In discussing cost-benefit analysis, EPA recently acknowledged:

In any complex analysis using estimated parameters and inputs from numerous models, there are likely to be many sources of uncertainty . . . including emissions inventories, air quality data from models (with their associated parameters and inputs), population data, populations estimates, health effect estimates from epidemiology studies, economic data for monetizing benefits, assumptions regard the future state of the world (e.g., regulations, technology, and human behavior). Each of these inputs may be uncertain and would affect the benefits estimates. When the uncertainties from each stage of the analysis are compounded, even small uncertainties can have large effects of the total quantified benefits.<sup>3</sup>

There are no standardized ways to conduct many of the elements of a cost-benefit analysis, including consideration of externalities, for different emissions scenarios for Santan. Such an assessment would require quantifying the contribution of emissions from Santan to ambient air concentrations of each pollutant considered, predicting the population exposed to these pollutants, projecting how health would be affected by these exposures, and placing an economic value on these effects. Standard, nationally-recognized approaches do not exist for conducting any of these analyses.

First, characterizing the impact of Santan emissions on pollutant concentrations in ambient air requires the use of an air quality model. Although EPA is required to promulgate regulations that “specify with reasonable particularity” models for characterizing the impact of individual sources on ambient air quality,<sup>4</sup> the Agency has been unable to do so for either ozone or fine

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<sup>1</sup> Kenneth J. Arrow, “The Organization of Economic Activity: Issues Pertinent to Choices of Market versus Non-market Allocation,” in 1 *Joint Economic Comm., 91<sup>st</sup> Cong., Analysis and Evaluation of Public Expenditures: The PPB System: A Compendium of Papers* 47 (1969).

<sup>2</sup> J.J. Laffont, “externalities,” in *The New Palgrave Dictionary of Economics* (Steven N. Durlauf & Lawrence E. Blume eds. 2d ed. 2008), [http://www.dictionaryofeconomics.com/article?id=pde2008\\_E000200&q=externality&topicid=&result\\_number=9](http://www.dictionaryofeconomics.com/article?id=pde2008_E000200&q=externality&topicid=&result_number=9); Paul M. Johnson, “Externality,” in *A Glossary of Political Economy Terms*, <http://www.auburn.edu/~johnspm/gloss/externality>.

<sup>3</sup> EPA, *Regulatory Impact Analysis of the Final Revisions to the National Ambient Air Quality Standards for Ground-Level Ozone* 6-16 (2015) [hereinafter Ozone RIA].

<sup>4</sup> CAA §165(e)(3)(D), 42 U.S.C. § 7475(e)((3)(D).

particulate matter (“PM<sub>2.5</sub>”).<sup>5</sup> These pollutants would be key if one were to try to quantify externalities, if any, associated with emissions from Santan.<sup>6</sup>

Second, characterization of exposed populations is also uncertain. In the Ozone Regulatory Impact Analysis (RIA), for example, EPA explains, “Monetized benefits are substantially affected by population density. Comparisons using historical Census data show that population projections are ±5% nationally, but projection accuracy can vary by locality. . . . The magnitude of impact on total monetized benefits depends on the specific locations where [a pollutant] is reduced.”<sup>7</sup>

Third, attribution of health effects to particular exposures is even more uncertain; indeed, it is perhaps the least certain element of an analysis of externalities. Substantial uncertainties may exist concerning both the existence of a causal relationship between certain health effects and air pollution exposure and, if such a relationship exists, the nature of the relationship. Is there a safe level for exposure – an effects threshold – or is every exposure of potential health concern? If a causal relationship exists, what is the magnitude of the effect – the dose/response relationship? Again using ozone as an example, EPA’s sensitivity analysis for effects of short-term exposures illustrates that consideration of the results of different studies produces widely varying estimates of the benefits from varying levels of ozone, including the possibility that there will be no benefits.<sup>8</sup>

Furthermore, there are no nationally accepted economic values associated with the uncertain health effects that may be predicted to result from changes in emissions. For example, EPA has acknowledged that “[s]ome studies suggest that EPA’s mortality valuation is too high, while other studies suggest it is too low.”<sup>9</sup> This uncertainty about valuation has a “high” impact on monetized benefits.<sup>10</sup> The valuation of other, less significant, health endpoints is also uncertain.

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<sup>5</sup> See Letter from Gina McCarthy, Assistant Administrator, EPA Office of Air and Radiation, to Mr. Robert Ukeiley 2 (Jan. 4, 2012).

<sup>6</sup> EPA has proposed revisions to its regulations that specify models to be used to characterize source impacts on air quality. 80 Fed. Reg. 45340 (July 29, 2015). Although EPA now proposes to discuss in those regulations modeling the impacts of individual sources on ambient levels of PM<sub>2.5</sub> and ozone, it does not propose to specify a model to be used for this purpose, proposing instead that the selection should be made on a case-by-case basis. *Id.* at 45348. Thus, even after EPA’s latest proposal is finalized, there would be no single “nationally recognized” model to estimate the impact of a source on ambient concentrations of PM<sub>2.5</sub> and ozone, and much less “nationally recognized values for the monetized externality costs of pollutants” from a single source.

<sup>7</sup> Ozone RIA at 6A-11, Table 6A. As discussed in this memorandum, the Ozone RIA acknowledges considerable uncertainty and lack of consensus about the approaches and valuations that are used in a cost-benefit analysis of nation-wide scope. If one were to attempt such an analysis for an individual source, which would require evaluation of potential impacts of much smaller pollutant quantities, the significance of many of the uncertainties would be magnified.

<sup>8</sup> See *id.* at 6B-2.

<sup>9</sup> *Id.* at 6A-9, Table 6A-1.

<sup>10</sup> *Id.*

For example, EPA explains that benefits calculated based on cost-of-illness estimates “are generally half the [willingness to pay] to avoid an illness.”<sup>11</sup> But it is unclear which of the two measures (i.e., cost-of-illness or willingness-to-pay) is more appropriate.

In short, there are no nationally-recognized means to conduct an externalities analysis. Nor are there standard, nationally-recognized ways of quantifying or valuing whatever externalities may occur. The assessment required by the added language in Condition 38 is ill-defined. More likely, it is an impossible task.

II. The Clean Air Act and Local Implementing Regulations Do Not Contemplate Subsequent Review of Emission Control Requirements in a New Source Review Permit.

SRP obtained a new source review permit for Santan’s expansion that required use of controls providing the lowest achievable emissions rates (“LAER”) for carbon monoxide, nitrogen oxides, volatile organic carbons, and coarse particulate matter (“PM<sub>10</sub>”) at the time the permit was issued.<sup>12</sup> SRP also obtained offsets for all nonattainment pollutants that the expansion was projected to emit in “significant” amounts. The result of obtaining such offsets was, in effect, an improvement of local air quality for these pollutants as a result of the expansion. Section 173 of the Act requires a source owner such as SRP to obtain a permit providing for this level of control of air emissions and offsets before a major modification – such as the Santan expansion – can be constructed or operated in a nonattainment area.<sup>13</sup> Once the source owner has obtained a new source permit, however, the Act and local implementing regulations do not provide for any subsequent review of the required controls, absent a modification of the facility or a change in applicable regulatory requirements. Indeed, although we have participated in numerous proceedings to obtain permits for new sources, including in Arizona, we are unaware of any example of a permit that requires subsequent review or reconsideration of the LAER determination for the permitted source, much less a requirement to engage periodically in an ill-defined cost-benefit or externalities analysis.<sup>14</sup>

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<sup>11</sup> *Id.* at 6A-11, Table 6A-1.

<sup>12</sup> See CEC (imposing a condition requiring this level of control).

<sup>13</sup> CAA § 173(a)(2), 42 U.S.C. § 7503(a)(2).

<sup>14</sup> Control requirements for a permitted source may change as a result of new regulations under other provisions of the Act, but these changes result from changes to the State Implementation Plan to implement the new regulation. They do not result from an independent review of an individual permit.