

# Antitrust Issues in Clean Technology

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*Energy forecasting is easy. It's getting it right that's difficult.* — GRAHAM STEIN, 1996

“Clean technology” has emerged as the potential “new new thing” of Silicon Valley and elsewhere, with over \$14 billion in venture capital investment in the past two years alone.<sup>1</sup> The United States, spurred by the Obama Administration’s policies and appointment of Steven Chu as Secretary of Energy, is focused on how to establish new industries based on clean energy technologies. As these industries increase in size, so, too, will potential antitrust issues. This article briefly describes what has become the commonly accepted meaning of so-called “clean tech” and discusses a number of potential antitrust issues surrounding the growth of clean technologies.

## What Is Clean Tech?

Defining “clean tech” is not as easy as it would appear at first glance.<sup>2</sup> According to authors Pernick and Wilder, “[c]lean tech refers to any product, service, or process that delivers value using limited or zero nonrenewable resources and/or creates significantly less waste than conventional offerings.”<sup>3</sup> That definition is very broad but captures, among other segments, the ones we note below, namely, solar energy, wind power, biofuels and biomaterials, green building materials, and smart grids. Although much of the attention in the clean energy industry has been focused on start-up operations, established firms such as GE, Honeywell, Applied Materials, and even Google, also have made substantial clean tech investments.<sup>4</sup>

Although this article might raise more questions than it answers, we hope it can serve as a starting point to consider the particular issues that may arise in applying antitrust principles to clean tech industries.

## Antitrust Matters in Clean Tech

Antitrust has not, up to this point, played a major role in clean tech. This is hardly surprising given that many clean tech sectors are still in the early stages of commercial development. This period of relative antitrust quiet is likely to change over the next three to five years as companies and

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<sup>1</sup> Press Release, CleanTech Group, LLC, Clean Technology Venture Investment Totaled \$5.6 Billion in 2009 Despite Non-Binding Climate Change Accord in Copenhagen, Finds the Cleantech Group and Deloitte (Jan. 6, 2010), available at <http://cleantech.com/about/pressreleases/20090106.cfm>.

<sup>2</sup> The emergence of “clean tech” is reminiscent of the emergence of “high tech,” which loosely referred to all forms of PCs, software, hardware, networking, telecom, and a host of other products and services. Over time, clarity emerged as to specific sectors and specific products and services within those sectors. One would expect the same to occur in clean tech.

<sup>3</sup> RON PERNICK & CLINT WILDER, THE CLEAN TECH REVOLUTION 2 (2008).

<sup>4</sup> Jonathan Burton, *Rolling Up Their Green Sleeves: Five Tech and Industrial Giants that Are Surprising Alternative-Energy Leaders*, MARKETWATCH, Apr. 21, 2009, <http://www.marketwatch.com/story/story/print?guid=AD080520-E2C6-43B4-932B-2F9A57375184>.

technologies mature, the distance between successful and unsuccessful market players widens, and competitors and vertically related entities align.

We discuss in this article certain antitrust issues likely to arise in this emerging sector over the near term: (1) market definition; (2) the approach of enforcers to increased M&A activity; (3) the growth of competitor collaborations short of merger; (4) vertical integration; and (5) approaches to monopolization claims. In assessing these issues, we also consider how the U.S. antitrust enforcement agencies might approach this industry.<sup>5</sup>

**Market Definition and Market Power.** Even a cursory review of clean tech industries reveals both their breadth on one hand, and many potentially narrow markets on the other. Consider solar energy for instance, probably the most mature of the clean tech categories. The products and services that comprise the solar industry include, to name just a few, solar panels, tools to manufacture solar panels, poly silicon, ingots, inverters, and installation services.

The infancy of clean tech technologies, products, and services complicates the market definition question. Defining a market is critical to assessing possible market power and evaluating most conduct challenged under Sherman Act Sections 1 and 2. Markets are largely defined based on the interchangeability of products or services, and thus it is often hard to define markets for products or services in their infancy. Much is yet to be determined as to the manner in which they will be adopted by consumers, if at all, and at what expense to other products and services. This difficulty may also hinder efforts to define innovation or technology markets in clean tech.

Questions that may arise include, for instance, does solar “compete” sufficiently with wind, other renewable energy sources, or conventional oil and gas for that matter, such that those alternatives should be considered in the same market? Depending upon the facts, parties to a transaction regarding solar panel systems may argue that customers who purchase solar panel systems view “traditional” electric power and, depending upon their location, wind as alternatives. Indeed, although we have not undertaken an economic analysis of potential substitutability, every wind turbine built may, to some extent, lessen demand for some other clean tech energy or historical energy source.

In defining relevant markets, U.S. antitrust enforcement agencies will likely assess what realistic alternatives a consumer or other purchaser in the distribution chain may have. Aside from the more typical analysis of demand-side substitutability, other market dynamics in this nascent industry may impact market definition and market power determinations. To describe just a few:

- Current and proposed government mandates and other regulations can limit substitutability between clean tech and traditional energy supply solutions and even among different clean tech solutions. How should such potential limitations affect market definition?
- Regarding solar in particular, are solar products and methodologies “competitive” with historical energy resources such that they should be considered in the same relevant product market? Solar power is gaining the widest adoption, and in part due to solar firms’ ability to use pre-existing semiconductor manufacturing processes, many believe that solar power will be cost competitive with conventional retail electricity rates at the mid-point of this decade.<sup>6</sup> If this growth is occurring at the expense of traditional energy, are solar and traditional energy sources in the same market for antitrust purposes?

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<sup>5</sup> The likely approaches of EU and other non-U.S. enforcement agencies are beyond the scope of this article, but they are no less significant. Counsel to clean tech companies should be mindful that multi-jurisdictional antitrust scrutiny is common.

<sup>6</sup> See, e.g., Ron Pernick & Clint Wilder, *Utility Solar Assessment (USA) Study: Reaching Ten Percent Solar by 2025*, at 7 (Clean Edge, Inc. & Co-op America Foundation June 2008), available at [http://www.cleaneedge.com/reports/pdf/USA\\_Study.pdf](http://www.cleaneedge.com/reports/pdf/USA_Study.pdf).

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- In green buildings, the goal is to create what are known informally as “negawatts,” which is a measurement of how many megawatts of “other” energy resources are saved. How would the agencies look at this inherent zero sum game? What level of competition between alternative energy sources—taking into account the negawatt calculation—would be sufficient to consider broader antitrust markets?
- The heavy upfront investment required in certain sectors, principally wind and biofuels, may foster an environment where fewer players may succeed (at least relative to other clean tech segments) and large multinational corporations, such as ADM in biofuels and GE in wind, may have an early advantage. In light of this, are these sectors more likely targets for antitrust scrutiny?
- How will the inability to “transport” energy impact geographic market analysis? For instance, wind turbines must be placed in locations that have certain wind flows, and the converted kinetic energy cannot be “shipped” very far, at least not until smart grids are more fully developed.
- How will the impact of China’s development of clean tech be felt? It is by far the largest investor in clean tech.<sup>7</sup> Will the presence of Chinese companies alleviate concerns about the exertion of market power in the United States? To what extent will that depend upon the ability to export Chinese output to the United States?

In the end, like all market definition analyses, much will depend on the actual customer purchasing patterns and the companies’ view of the market(s) in which they compete.<sup>8</sup>

**Mergers & Acquisitions.** Although we expect mergers and acquisitions in this area to pick up considerably in the next three to five years, certain notable transactions have already been consummated. To name a few:

- SunPower announced an agreement to acquire SunRay Renewable Energy (solar power plants) in February 2010 for \$277 million.<sup>9</sup> SunPower designs and manufactures solar panels, serving residential, commercial and utility customers. This transaction was SunPower’s fourth in three years.
- In February 2010, French state-controlled nuclear power developer Areva announced an agreement to acquire Silicon Valley-based solar thermal developer Ausra.<sup>10</sup>
- In October 2009, MEMC Electronic Materials (MEMC), a global provider of wafers and other products to the semiconductor and solar industries, and SunEdison, a solar energy services company, announced that MEMC will acquire SunEdison.<sup>11</sup> The transaction was valued at \$200 million.

<sup>7</sup> Jennifer Kho, *The Largest Cleantech VC: China*, EARTH2TECH.COM, Feb. 26, 2010, <http://earth2tech.com/2010/02/26/the-largest-cleantech-vc-china/>.

<sup>8</sup> We caution against falling into the “Cellophane Trap” in testing for product markets in clean tech sectors. The Cellophane Trap occurs when the prevailing prices are already supracompetitive. If that is the case, asking whether consumers would switch to another product if prices rose may very well overstate the substitutability of products. This scenario seems plausible in clean tech, where certain nascent areas may only be served by one or two players, and thus in theory at the outset certain markets may reflect higher than “competitive” prices. See *United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377 (1956) (*Cellophane*).

<sup>9</sup> Candace Lombardi, *SunPower to Acquire SunRay for \$277 Million*, CNET, Feb. 11, 2010, [http://news.cnet.com/8301-11128\\_3-10451662-54.html](http://news.cnet.com/8301-11128_3-10451662-54.html).

<sup>10</sup> Press Release, Ausra, Inc., AREVA to Acquire the U.S. Solar Company Ausra (Feb. 8, 2010), available at <http://www.ausra.com/news/releases/100208.html>.

<sup>11</sup> Press Release, SunEdison LLC, MEMC to Expand Scope of Solar Business with Acquisition of SunEdison (Oct. 22, 2009), available at [http://www.sunedison.com/press\\_releases.php?id=82](http://www.sunedison.com/press_releases.php?id=82).

The SunPower/Sun Ray and MEMC/SunEdison transactions are two examples of the trend towards integration emerging in the solar power sector. The SunPower transaction reflects a trend towards vertical integration intended to achieve scale and cost savings, both of which will help the firm's output become more cost competitive with conventional retail electricity. The Areva transaction, in turn, illustrates the expansion of larger, incumbent energy firms—Areva is a leading provider of nuclear power—into the clean tech sector.

The U.S. antitrust enforcement agencies have not had much opportunity or reason to review clean tech transactions. However, the Federal Trade Commission's 2009 review of the proposed Panasonic/Sanyo transaction,<sup>12</sup> which arguably skirts the edges of clean tech, may shed some light on how the agencies might define a relevant "clean tech" market in the context of a merger investigation. The transaction proposed to combine, among other assets, the parties' portable nickel-metal hydride (NiMH) and hybrid electric vehicle (HEV) battery assets. Portable NiMH batteries are used to power, among other kinds of portable consumer devices, two-way radios used by police and fire departments. HEV batteries, in turn, are used to power hybrid electric vehicles.

After an extended review,<sup>13</sup> the FTC asserted that the transaction would substantially lessen competition in the sale of portable NiMH batteries, but would not pose any such concerns in the HEV battery segment. The FTC acknowledged that there are other portable rechargeable battery chemistries, including nickel cadmium and lithium-ion ("Li-ion"), but nonetheless concluded that portable NiMH batteries constituted a relevant antitrust market. The FTC alleged that even though all three chemistries can be used in the production of rechargeable batteries, some products, most notably two-way radios, were designed to accommodate portable NiMH batteries, and customers of two-way radios could not switch to another battery. The FTC further claimed that customers—even those not allegedly locked into using a NiMH battery—had a strong cost- and performance-driven preference for NiMH batteries. According to the FTC, Panasonic and Sanyo produced the highest quality portable NiMH batteries and thus were each others' closest competitors. For these reasons, coupled with the FTC's conclusion that new entry or repositioning would be insufficient to counteract any alleged anticompetitive effects of the merger, the FTC challenged the transaction. To resolve the agency's concerns, the merging parties agreed to divest certain of Sanyo's portable NiMH battery assets, including a manufacturing plant, to FDK Corporation, a subsidiary of Fujitsu.<sup>14</sup>

The FTC also investigated, but reached a different conclusion regarding, the transaction's likely impact on competition for HEV batteries. According to the FTC, Panasonic and Sanyo were the most significant suppliers of NiMH batteries used in current-generation HEVs, but improvements in Li-ion technology made Li-ion HEV batteries a better alternative to NiMH HEV batteries. The FTC concluded that the combined firm would compete directly against a number of Li-ion HEV battery producers in the future. As a result, the FTC concluded that the merger did not raise any competitive concerns in the "HEV battery market."

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<sup>12</sup> Panasonic Corp., FTC Docket No. C-4274, File No. 091-0050 (Jan. 6, 2010) (decision and order), available at <http://www.ftc.gov/os/caselist/0910050/index.shtm>.

<sup>13</sup> The parties announced the transaction in December 2008, and it closed in December 2009.

<sup>14</sup> The parties also previously agreed to divest certain European assets to resolve European Commission concerns over the transaction's alleged effect on competition for primary cylindrical lithium batteries, portable rechargeable nickel-metal hydride batteries and rechargeable coin-shape batteries based on lithium.

This enforcement action suggests that, in merger reviews, the FTC is likely to approach market definition issues in clean tech industries as it does in more traditional industries: identify the overlapping products and the firms that supply those products and assess—in a fact intensive way—the full range of competition from other products. The enforcement agencies are unlikely to consider “clean tech” as a relevant antitrust market. Instead, they will likely consider “clean tech” as consisting of many markets whose contours will undoubtedly change as these sectors evolve over time.

An increase in the rate of transactions in the clean tech industry would be consistent with the evolution of the technology industry. More specifically, over the next several years in clean tech, companies may seek to acquire other companies to achieve additional scale (a critical differentiator over time), enhance capacity, and/or combine complementary customer bases and skill sets.

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Given the likely growth in transactions and enforcement of the merger laws in the United States and abroad, companies seeking to expand by acquisition should consider how best to position themselves. Market definition will play a significant role in the outcome of these investigations, as will the parties’ documentary evidence concerning meaningful rivals. Parties may argue that, given the nascent status of clean tech, markets are highly dynamic, fast moving, and should not be the subject of government intervention. The power of this argument will depend on the facts of the particular merger, but it is an argument often made in technology mergers, with mixed success. Often such concerns are overblown by some and, more importantly, not accepted by regulators.

**Collaborations Short of Merger.** We also expect an alignment of rivals and, probably more likely, of complementary parties through collaborations short of merger. For example, in February 2010, Royal Dutch Shell plc and Cosan SA announced their intention to form a \$12 billion joint venture in Brazil for the production of ethanol, sugar, and power, and the supply, distribution, and retail of transportation fuels.<sup>15</sup> In the near term, we expect the number of such complementary alignments to outnumber horizontal transactions as industry participants seek to quickly plug holes in their portfolios and capabilities. Some clean tech strategies are indeed targeted at harnessing complementarities in clean tech energy approaches. For instance, the development of smart grids is intended to capitalize on the optimal time of day and weather usage; where one technology may have “downtime,” another may not, thereby maximizing a full grid.<sup>16</sup>

Another area of likely collaboration will involve the increasing use of industry standards. Cooperation around standards can reduce unnecessary costs and facilitate the adoption of technologies, as occurred in personal computing. Indeed, one of the many challenges in the advancement of solar technology is the inconsistency among utility districts, rendering the development of industry-wide standards and protocols that are desirable but difficult to achieve.<sup>17</sup> They are also needed in the development of smart grids.<sup>18</sup>

In considering the potential pitfalls associated with standard setting in clean tech, firms and their counsel should take into account the 1969 consent decree entered to resolve the Department

<sup>15</sup> Press Release, Royal Dutch Shell plc, Shell and Cosan Sign MOU to Form Joint Venture in Brazil (Jan. 2, 2010), available at [http://www.shell.com/home/content/media/news\\_and\\_library/press\\_releases/2010/shell\\_cosan\\_mou\\_brazil\\_01022010.html](http://www.shell.com/home/content/media/news_and_library/press_releases/2010/shell_cosan_mou_brazil_01022010.html).

<sup>16</sup> Many company interactions in clean tech may very well involve both complementary and competitive elements. In these situations, the parties should be careful to understand which “hat”—whether competitor or complement supplier—they are wearing.

<sup>17</sup> Pernick & Wilder, *supra* note 6, at 31.

<sup>18</sup> *Id.* at 186.

of Justice's complaint against the Automobile Manufacturers Association that alleged an illegal conspiracy relating to the development of automotive pollution control devices.<sup>19</sup> California regulators have long led the setting and enforcement of environmental policy in the United States. In the 1960s, the State of California adopted new auto emissions standards and announced that automotive manufacturers would be required to install pollution control devices on new vehicles when at least two devices satisfied the state's criteria for such devices. In 1964, the major U.S. auto manufacturers announced that they would not be able to meet the state's pollution control standards until 1967, but just three months later, the state certified four pollution control devices developed by independent manufacturers. Two months later, in August 1964, the auto manufacturers announced that they had developed design changes to their engines that were better than any independently produced devices and could implement the proposed changes soon thereafter.

This set of circumstances sparked the interest of the DOJ, which opened an investigation into whether the leading U.S. auto manufacturers had colluded to delay the development of pollution control devices. In 1969, the DOJ brought a complaint against the Automobile Manufacturers Association (whose members were the auto majors), alleging that its members had, since as early as 1953, conspired to eliminate "competition in the research, development, manufacture and installation of air pollution control equipment, and . . . in the purchase of patents and patent rights from other parties covering" such equipment.<sup>20</sup> The DOJ further alleged that the manufacturers had agreed, among other things: (1) to undertake all air pollution control equipment development on a noncompetitive basis; (2) to seek joint appraisal of any patents submitted to the manufacturers by third parties; and (3) to install air pollution control equipment only upon an agreed date.

After months of negotiation, the manufacturers agreed to a consent decree resolving the DOJ's concerns. The decree required, among other things, that the defendants issue to any applicant interested in developing motor vehicle air pollution technology royalty-free licenses under all patents covered by a 1955 cross-licensing agreement among the manufacturers.

Although this case does not fit squarely into the category of "clean tech," the issues it raises could arise for clean tech firms faced with the prospect of complying with state- or federally-mandated product or performance standards or otherwise collaborating on industry standards. In many, if not most, instances, standard setting can be procompetitive, efficiency-enhancing, and good for consumers. However, as *Automobile Manufacturers Association* suggests, participants in collaborations intended, for example, to exclude competitors or delay the process of innovation may find themselves in the crosshairs of antitrust.

***Relationships Among Vertically Aligned Companies.*** Vertical mergers, where one party purchases a supplier of a key input or component, should be of lesser interest to the agencies than horizontal mergers, despite the Obama Administration's pronouncement that it expects to be more vigilant regarding vertical foreclosure issues.<sup>21</sup> That is because in most instances, vertical transactions are likely to create substantial cost efficiencies. Moreover, clean tech industries are

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<sup>19</sup> See *United States v. Automobile Mfrs. Ass'n*, 307 F. Supp. 617 (C.D. Cal. 1969) (approving consent decree); see also *United States v. Motor Vehicle Mfrs. Ass'n*, 643 F.2d 644 (9th Cir. 1981) (reversing the district court's denial of the DOJ's motion to extend the term of the consent decree). The Ninth Circuit quoted extensively from the DOJ's complaint.

<sup>20</sup> *Motor Vehicle Mfrs. Ass'n*, 643 F.2d at 645.

<sup>21</sup> Christine A. Varney, Vigorous Antitrust Enforcement in this Challenging Era, Prepared Remarks Before the Center for American Progress (May 11, 2009), available at <http://www.justice.gov/atr/public/speeches/245711.htm>.

relatively fragmented, rendering it difficult to identify “dominant” firms in “new” energy generation, transmission and distribution chains.

However, one cannot rule out close scrutiny in acquisitions where one company purchases another that is the only or one of only a few sources of important inputs. In these cases, vertical integration could foreclose rivals from access to key inputs or otherwise increase their costs of obtaining them. Alternatively, such integration could facilitate collusion in the upstream or downstream market (e.g., a supplier’s acquisition of a disruptive buyer that eliminates significant head-to-head competition between the supplier and its competitors). Moreover, given the heavily regulated energy environment into which clean tech is entering (e.g., the price at which electricity can be sold by utilities is at best only partially market-driven), there may be incentives for downstream companies to integrate upstream as a means of avoiding rate regulation. In those limited cases that may present competitive concerns, the DOJ and FTC may increasingly ask for non-discrimination commitments in the form of consent decrees, and/or firewalls to prevent the flow of competitively sensitive information between the upstream and downstream components of the merged firm.

**Monopolization.** As noted above, although clean tech industries remain somewhat fragmented, growth and consolidation is likely. As a result, there is a risk that a clean tech company may have market power or may use that power to engage in exclusionary behavior.

Monopolization issues that could surface in the clean tech industry include the following:

- To a certain extent the government plays a role in determining clean tech winners and losers. This can be through a “carrot” of investment funds or through “stick” mechanisms, such as penalties for certain usage, sin tax, caps, etc. Will that weaken a plaintiff’s ability to contend that a company has either obtained or maintained a monopoly through unlawful means? To the extent government regulation plays a significant role in clean tech growth, could that lead to dual, and possibly conflicting, enforcement priorities for antitrust and other industry-specific agencies?
- Where will the state of law be regarding bundling issues and how will it be applied in the clean tech arena? One could see more mature industry players trying to capitalize on their breadth of product offerings to drive adoption of related but nascent clean technologies.
- As firms vertically integrate and potentially terminate supply relationships with competitors, are there any scenarios that could give rise to allegations of a duty to deal?

## Conclusion

As discussed above, clean tech industries will raise fascinating competition questions as the market dynamics, preferred resources and solutions, and agency oversight shake out over time. In the meantime, clean tech companies should be mindful of the pitfalls that can occur, and pay attention to the development of antitrust policy in this area in the coming years. ●