Environmental and Other Co-benefits of Developing a High Speed Rail System in California: A Prospective Vision 2010-2050

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NIMBY and ROW

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Introduction

“Mode of failure analysis” is an underappreciated exercise in project and program planning, directed at anticipating the most likely ways implementation can go wrong. The spirit is properly to modify the program design so as to minimize the likelihood of the greatest risks, and to be prepared with repair and response mechanisms to keep it viable after one comes to pass, though in practice it often degenerates into project proponents arguing that this or that proposed risk is exaggerated and not worth attending to. High speed rail (HSR) has many opportunities to fail before the first passenger takes a trip; this essay attends to a characteristic risk of any system dependent on an exclusive right-of-way (ROW) constrained to connect an origin and a destination in an unbroken line, namely so called NIMBY (for Not In My Back Yard) opposition from stakeholders near or on any proposed route. The NIMBY phenomenon, reified by the acronym 2, is already salient in the California HSR policy debate (Dungan 2010). Whether HSR is good for California is a debate outside the scope of this discussion, which proceeds as though that question is settled in the affirmative. The present questions are, can local opposition to ROW and station location hinder or halt the program? if so, why should this be? and what can be done about it? I begin with a parable:

On a cold northern night, a small-town resident driving by a frozen pond opens the window of his car to throw out an apple core, and just at that moment, hears a cry for help. Stopping the car and getting out, he realizes a child has fallen through the ice. Without thinking, he wades into armpit-deep water and saves the child. Later, a familiar scene; flashing red lights, police radios going on and off, people milling about, and the driver sitting shivering on a log wrapped in a blanket. A TV reporter thrusts a microphone before him. “You saved that little girl! How do you feel now?” “I’ll tell you how I feel; I’m furious. My clothes are ruined, I’m freezing cold, I could have drowned, and I’m late for dinner. It’s completely unfair that I was the one this happened to; we have a fire department for this kind of thing! I’m going to sue everyone; the kid’s parents, the town, and the owner of the pond.”

Everyone I’ve told this story to finds it ridiculous, unimaginable, absurd. The hero would say something completely different, like “I’m just so glad I was able to help; her poor parents!” Abstracting the example, one would think that having the opportunity to incur a significant but manageable risk or cost in the service of one’s community would always seem like a piece of good fortune to be seized, but local opposition to generally beneficial land uses confounds this expectation.

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1 I intend to eschew railroad metaphors, at least in this draft, because they are so apropos and seductive that I fear “going off the tracks”, “back on the rails”, “reach the station” and “trainwreck” taking over the discourse.
2 And a family of relatives, including LULU (Locally Unwanted Land Use), BANANA (Build Absolutely Nothing Anywhere Near Anything), NOPE (Not On Planet Earth), and my personal favorite, NIMTO (Not In My Term of Office).
Facility Siting analytics

A NIMBY is either an local opponent of a facility (in which case the term has a pejorative intent, implying selfishness or cupidity (Hermansson 2007)) or a land use opposed locally. The term appears to have originated in 1980 in a newspaper article (Livezey 1980), though a similar phrase for the same phenomenon is in the title of a 1977 journal article (O'Hare 1977). I will use it in the second sense, more generally to describe the political conflict associated with something people generally want, but few want near them.

Good investments left on the table

The key elements of a NIMBY dispute are

- a location-specific proposed land use,
- that prospective neighbors see as noisome (dangerous, noisy, ugly, and/or reputationally damaging, etc.), and
- that creates net benefits for a large population including many stakeholders far from its site.

Note that an ill-conceived facility—something with negative total net benefits—opposed by neighbors is just a bad idea, not a NIMBY. The core of the NIMBY problem is the likelihood of not building something *that’s good for society as a whole, counting the local costs it imposes*, because it is politically impossible in any particular location.

NIMBY opposition derives from real perceived costs and fairness judgments

Local opposition to NIMBYs derives from a combination of perceived costs, among which are often real costs, and also a combination of process-related perceptions including mistrust of government or business, and a sense of unfair treatment (Hunter and Leyden 1995; Gibson 2005). Most of the early research on NIMBYs concerned things like hazardous waste processing and disposal sites and LNG terminals that posed real risks (however large or small in fact) of toxic or other injury to neighbors; a famous enduring NIMBY episode is the search for a disposal site for nuclear waste in the United States (Bewick 2010). However, local opposition also obstructs construction of things like airports (on grounds of noise, traffic, land taking and community disruption), landfills (Feinerman, Finkelshtain et al. 2004), and social service facilities like homeless shelters (Gibson 2005), projects whose physical or health risks to neighbors are small and neighbors are mainly concerned about economic or symbolic costs.

The strategic disposition of a NIMBY dispute begins with an expectation of local costs conditional on operation of the new facility. Neighbors face a decision, when a project is proposed, whether to incur costs to oppose it, using a variety of well-known tactics. The project developer has a variety of response options, and a successful enterprise depends on correctly reading, and modifying, the neighbors’ decision structure. Figure 1 illustrates the generic choice facing possible NIMBY project opponents as a decision tree. One branch, labeled “Oppose” has costs of time, attention, stress, and money, and leads to two outcomes, “Build” and “No-build” with probabilities attached, the successful implementation of the project and its failure or abandonment respectively. In turn, “Build” leads to a variety of results, with associated probabilities. The other action choice, “Accept”, may have immediate costs (for example, social pressure if other neighbors have chosen the other branch) and similarly leads to two possible project outcomes with
possible consequences. A NIMBY conflict arises when enough neighbors see the “Oppose” branch as preferred.

![Decision Tree Diagram]

**Figure 1: Decision of a project neighbor**

Project advocates can change this decision tree in two generic ways. First, they can change participants’ probabilities of different outcomes, by sharing information and evidence from expert analysis or by reference to comparable projects elsewhere. Second, they can decisively attach additional consequences that change the net value of being at the end of different branches. Both approaches impose costs on the project, costs that may not be recoverable if the project does not proceed.

**Collective action and strategy**

The distribution of costs and benefits in a facility siting conflict is central to the probable outcome, and to effective strategies for countering NIMBY opposition. In particular, a project disfavored by neighbors almost always imposes large per capita costs on them (or they think it will), while the positive net benefits balance depends on small per capita benefits delivered to a very large population, many of whom don’t necessarily know they are in it. In the case of a new rail line proposed to pass through a town but not stop in it, the beneficiaries include the entire population of the region served by the line insofar as it benefits the economy, the population of the earth insofar as rail travel inhibits climate change, and the people who will ride the train when it is operational.

Mancur Olson provided the key theoretical explanation of why a small group with high individual stakes in a decision will have a great strategic advantage over a large, diffuse group even when the latter has more to gain or lose in total (Olson 1971). A small group of neighbors is able to identify and coerce slackers in the opposition effort, feels responsible to each other and to its community, and can condition private benefits on participation, while the population of a large polity faces powerful free-rider incentives to remain tacit and has to act through a complicated, slow-moving, bureaucratic and legislative machinery. Major project conflicts are more complicated, as local opponents typically form coalitions with other stakeholders opposed to the project as a whole, to the
project’s basic technology, or just seizing an opportunity to build their own power and influence with a live controversy.

Olson’s model is the basis for the analysis of the NIMBY problem in (O’Hare, Bacow et al. 1983)³ and, less directly, for most subsequent research in the field. Briefly, we argued that neither the legal right to proceed with a project (permits, etc.) nor a demonstration persuasive to a neutral third party or objective observer that local costs are actually small, are likely to make the “Accept” branch of a local opponent’s choice preferable to “Oppose”. We also argued that local opposition will, by Olson’s model, probably succeed through well-known means of opposition, including extra-legal means, that seem efficacious to this small group (of which the classic meme is “standing in front of the bulldozers with baby carriages”). The large, diffuse group of project beneficiaries often cannot deliver the political force necessary to overcome determined local resistance.

**Rail location local costs and benefits**

A limited-access transportation link like a freeway or rail line poses a distinctive set of spatially distributed costs and benefits. Near access points, residents may suffer increased local traffic but will enjoy improved access to other stations or intersections, and usually, higher property values owing to commercial and residential development opportunities like transit villages (Dittmar and Ohland 2004). They may also experience destruction of social capital embodied in the traditional habits and relationships of their community as it grows, and a particular group, whose property is used for the project itself, will face displacement from homes and businesses bought or condemned for the project. An access point offers a mixture of benefits and costs, but is probably regarded positively by prospective neighbors (though it appears that intra-city proximity to such nodes does not always significantly affect property values (Ahlfeldt 2009)).

Between access points, along the right of way, are costs with few benefits. Landowners face expropriation or purchase of land and possibly homes and businesses (many for a highway, fewer for rail); and on a wider stripe on each side of the alignment, people can expect noise and visual intrusion. At-grade links obstruct local travel across the ROW, while underground placement is less disruptive after, and sometimes during, construction. Elevated tracks or lanes blight streets beneath them, as anyone who remembers New York’s Third Avenue before 1955, or Boston under the Central Artery, can confirm. In rural areas, the number of people affected by a mile of new track is usually small, but in suburban and developed areas many residents can expect significant disruption of their lives.

A high-speed train passing eighty feet away (about the depth of a suburban lot) at 180 mph is a 100 db experience (Schulte-Werning, Thompson et al. 2008), and because it is a line rather than a point source, the intensity decreases only linearly with distance normal to the track, or about 94 db a football field distant. Many residents reasonably foresee nearby location of a rail line as reason to move entirely, selling their principal asset for a significant loss, and sound walls of the type that increasingly line freeways are themselves distasteful if only on grounds of visual aesthetic impact.

Complicating the siting problem for a rail alignment are the constraints of maximum radius curves, grades, and the requirement that the chain of “sites” be adjacent. This makes holdouts especially important and assures that while political debate can

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³ Much of the discussion in this essay derives from the analysis in this work.
discriminate among a few alignments several miles apart, once one is chosen eminent
domain taking will almost assuredly be required, so the experience of coercion (actual or
latent) is added to the costs affected stakeholders anticipate.

Realignment of local incentives
Some governments hold practical power to impose costs for a national or regional
purpose (or, of course, for private enrichment of oligarchs and rulers). Thousands of
miles of HSR have been put in place not only in China but also in western European
countries no-one would see as autocracies. Even there, however, the siting problem is
not merely technical: selecting the route for the Lyon-Marseilles TGV took more than
four years punctuated by a blockade of the main Paris-Marseille rail line and widespread
public demonstrations, and led to an extensive reform of French public participation and
deliberation procedures (de Carlo 2006).
The insight that determined local opposition cannot be overcome, at least in a democracy,
by government coercion at the disposal of a transportation agency or a developer, legal
procedures, or technical browbeating, leads directly to a search for ways to reduce the
motivation of neighbors to oppose projects of this kind.

Compensation
The first classic non-coercive approach to the NIMBY problem is a mechanism to attach
compensation of some sort for the costs the project imposes on neighbors so they will not
want to oppose the project. A variety of schemes to determine, and to pay, money
compensation have been put forward, including structured negotiations with a designated
community body (O'Hare, Bacow et al. 1983), and an auction of the facility to the site
willing to accept the smallest compensation payment (Kunreuther and Kleindorfer 1986).
Compensation schemes are theoretically sound and especially attractive on conventional
economic grounds, because a net-beneficial project, by definition, can come up with
payments that offset its costs; the approach is in essence one of converting a policy that
meets a Kaldor-Hicks test into a Pareto-superior change. They also have the advantage
that, again in theory, projects that look net beneficial but really aren’t will be so revealed,
because the local costs are made manifest in the negotiation or auction process. And they
are empirically supported by the thousands of cases in which facilities of various kinds,
including not only the ideal smokeless, noiseless hi-tech operation whose PhD employees
commute on bicycles, but also prisons, are accepted because they promise employment
and economic growth (even if the promise is not always fulfilled)(King, Mauer et al.
2004).
One type of compensation that has particular promise in this context is conditional
guarantees like property value insurance. A homeowner displaced by noise can at least be
assured that he won’t suffer a financial loss when a nearby train alignment makes his
home much less valuable.
Compensation (automatic in the case of takings and purchase of land) is probably a
minimum requirement for a successful outcome where local opposition is based on real
expected costs (including costs attributable to future homebuyers who have not
experienced the learning process associated with the project development). A sincere and
credible attempt to make neighbors reasonably whole when they accommodate a socially
beneficial project (especially when, as neighbors of internode track but not access points,
they have little to gain from it directly) is a necessary beginning, though not the end, of local opposition conflict resolution.

**Process legitimacy**

Pure money compensation has a disappointing track record at least in the context of facilities threatening health or injury risk. Here we need to view citizens and stakeholders as optimizing something more complicated than wealth, or even wealth plus some money equivalent of expected health. The most important non-economic factors in triggering and maintaining public opposition to local facilities are approximately the following:

- Aversion to coercion
- Mistrust of government
- Mistrust of private enterprise
- Mistrust of science
- Desire not to be taken advantage of
- Concern for family, especially children
- Local social capital (community, and belonging to it)
- Concern that the siting choice process was unfair
- Suspicion that a siting decision does not rest on sound scientific judgment
- Concern that the whole project is ill-advised on net-benefits grounds
- Fear that costs will be irreversible if rosy predictions are not fulfilled
- Fear of damage to locality reputation

all attested in the variety of “compensation revisionist” research that has appeared over the last two decades (Frey and Oberholzer-Gee 1996; Frey, Oberholzer-Gee et al. 1996; Gibson 2005; Hermansson 2007), a body of work usefully reviewed and summarized in (Schively 2007). These authors, and others, argue or demonstrate that success in the face of NIMBY opposition cannot be achieved by any single administrative device, especially cash payments. Notice that to the degree that opponents think a proposal resulted from an illegitimate political process (or defective science and engineering analysis), accepting money compensation marks the recipient as taking a ‘bribe’ to compromise on principle.  

Fortunately, HSR ROW alignment does not generally raise the issues of toxic injury that characterizes siting waste disposal. It may raise concerns about neighborhood reputation, though less dramatically than “becoming America’s nuclear dumping ground” resonated in Nevada; either side of tracks is usually not viewed as prime residential real estate.

What makes a siting process appear legitimate in the eyes of locally affected parties is not fully understood. It certainly has to do with transparency and access for all

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4 The condemnatory use of the word bribe for compensation is political rhetoric and incorrect on the facts; a bribe is a secret payment to change a party’s incentives from what they appear to be. This doesn’t stop fervent project opponents from saying that the government is “bribing us to put our lives at stake”.

5 My own company and city are mainly in the business of importing and treating something widely recognized to be much more dangerous than any chemical or isotope, and from a wide catchment area, namely ignorance. For some reason this is not seen as injurious to their reputations; go figure.
to make their views known, but especially in the context of environmental harms it also involves distributional issues recently studied under the umbrella of *environmental justice* (Pastor, Sadd et al. 202). One of the most certain advantages of being richer rather than poorer is having more choice about where one lives, and the rich have moved to where the air and water are cleaner, and the views better, since neighborhoods began. The highway programs of the 60s and 70s were roundly condemned for selecting rights-of-way where land was cheap and displaced residents powerless. Some NIMBY scholarship has recognized the great advantages in deflecting undesired land uses held by high-income suburbanites (Brion 1985), advantages that include access to powerful political actors and the ability to hire lawyers and consultants.

The differential effects of unwanted land uses on rich and poor communities cuts two ways in locating the HSR. On the one hand, alignment through or near poor communities will raise questions of discrimination with echoes of the “Negro removal” charge against freeways and urban renewal. On the other hand, and not to put too fine a point on it, the route from San Francisco to Los Angeles goes through Atherton and Palo Alto, and those comfortably situated communities have already mounted opposition to the peninsula route (Dungan 2010).

**NIMBY Discourse**

The claims put forward by the peninsula litigants and stakeholders in Mountain View (Samuels 2010) are worth noting as examples of the direction public debate is likely to take, and its tendency to spread to larger issues even when the motivation is local; if a NIMBY can be shown to be a NOPE, prospects of assembling a coalition to stop it are improved. The Mountain View neighbors are seeking underground construction at the HSR Authority’s or federal expense (local cost mitigation), assert their unwillingness to pay for the cost difference locally, and seek to double the comment and response period on the draft EIR, though they express support for HSR generally. The Atherton, Palo Alto, and Menlo Park litigants challenge the environmental impact analysis, doubt the ridership and financial viability of the project generally (seeking to demonstrate negative overall net benefits), and propose a completely different route along the East Bay shore.

The breadth of considerations for which standing in a debate like this may be claimed is almost unlimited; noteworthy on this score is the demand of a Florida congressman that the French SNCF, a likely bidder on any US HSR project, be disqualified from the Tampa-Orlando project on grounds of the participation of the French railways in transporting Jews to concentration camps during World War II. This attack has already caused the SNCF to send its president to Florida to apologize to elected officials there (2010).

It is to be expected that project opponents will use whatever arguments fall to hand and can be presented with a straight face, at least insofar as they are determined that the best outcome is no project in their location. This strategic discourse, that necessarily

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6 The Atherton et al lawsuit has accreted the following co-plaintiffs: Planning and Conservation League, the Transportation Solutions Defense and Education Fund, the California Rail Foundation, Community Coalition on High-Speed Rail, Mid-Peninsula Residents for Civic Sanity Dungan, J. (2010). Peninsula cities sue to derail high-speed rail project. *Mercury News*, San José.
combines reasonable considerations with assertions and claims that do not bear on the real issues, greatly complicates the task of the agency proposing the project.
Leadership
In a retrospective discussion of the failure of the compensation- and information-focused Massachusetts Hazardous Waste Facility Siting act, Debra Sanderson and I identified attention to leadership as a critical missing piece of our own, and others’, understanding of the NIMBY problem (O'Hare and Sanderson 1993). When the dust clears, many locally undesired land uses remain undesired, even with the sound engineering and planning analysis and attempts to mitigate harm and compensate for damages that are generally necessary but not sufficient conditions for acceptability. Neighbors of these facilities, assuming they are broadly socially desirable, are being asked to accept costs on behalf of a larger social good, quite in the fashion of the local hero with whose imaginary story we began this discussion. Without appropriate political leadership that both recognizes and credits good behavior and calls out the easy retreat to “my fair share…and not a penny more” morality that project neighbors can easily fall into, the complexity of NIMBY conflicts, both in terms of participants and issues, favors paralysis and failure.
References


Ahlfeldt, G. M. (2009) The Train has Left the Station: Do Markets Value Intra-City Access to Inter-City Rail Connections. Volume, DOI:


