which evaluates applications under a public interest review, as well as the environmental criteria set forth in the guidelines established in CWA Section 404.

Fish and Wildlife Coordination Act

It is generally acknowledged that the first major federal wildlife statute to employ the strategy of compelling consideration of wildlife impacts was the Fish and Wildlife Coordination Act of 1934 (FWCA) (Bean 1983). Its enactment pre-dates much of the current body of environmental law, including the National Environmental Policy Act.

The FWCA represents one of the earliest and most significant indications of the intent of Congress that fish and wildlife considerations were to be a major component of the analysis of projects affecting bodies of water and were to receive equal consideration with other traditional project purposes such as navigation and flood damage reduction. Because of its wide applicability to water resource development projects, it has often been referred to as “umbrella” authority for the involvement of the U.S. Fish and Wildlife Service (FWS) in project planning (Smalley 2004). FWS and National Marine Fisheries Service evaluates impacts on fish and wildlife of all new federal projects and federally permitted projects, including projects subject to the requirements of Section 404 of the CWA.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service (FWS) and the U.S. National Oceanic and Atmospheric Administration (NOAA) Fisheries Service. The FWS maintains a worldwide list of endangered species. Species include birds, insects, fish, reptiles, mammals, crustaceans, flowers, grasses, and trees.

The law requires federal agencies, in consultation with the U.S. Fish and Wildlife Service and/or the NOAA Fisheries Service, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife (EPA 2011).

Consequences of Regulatory Process

Most of these statutes and implementing regulations were not in effect for the first 10-12 years of the interstate highway program when nearly half the system was built.
The federally funded projects being built today must have an environmental impact statement that take into account the impact of the project on air and water quality and the natural and built environment. This often requires considerable study of ecosystems and the habitat and migratory patterns of species.

The impact of these environmental statutory and regulatory changes in transportation project development have lengthened the time it takes to move a project from concept to environmental clearance and permitting to design, construction and operation. The California High-Speed Rail Project will be examined to illustrate the length of time it takes to move through the environmental review and approval process.

CALIFORNIA HIGH-SPEED TRAIN PROJECT

The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) required Amtrak, the U.S. Department of Transportation (US DOT), Federal Railroad Administration (FRA), States, and other stakeholders to begin improving intercity passenger rail service, operations, and facilities. PRIIA focused on Amtrak's long-distance routes and the Northeast Corridor (NEC), state-sponsored corridors throughout the country and the development of high-speed rail corridors. Just as the Yellow Book provided guidance that helped realize the 46,000-mile Interstate Highway system, PRIIA aimed to define a multi-state vision for passenger rail across the U.S.

With PRIIA as a backdrop, President Barack Obama announced plans in April 2009 for the development of a high-speed rail network connecting major cities that house 80 percent of the country's population. President Obama pledged $8 billion in high-speed rail program funds set aside from the $787 billion stimulus funding package. States were invited to identify and propose the development of high-speed rail corridors, which would be funded on a competitive basis.

One of the most ambitious state-sponsored high-speed rail programs in the United States is the 800-mile high-speed train project in California designed to link San Diego, Los Angeles, and the cities of the Central Valley to San Jose, San Francisco and Sacramento.

Planning for the California High-Speed Rail Project

Planning for the proposed California High-Speed Train Project had begun years earlier. In 1993, the California State Legislature created the California High Speed Rail Commission to study the feasibility of a high-speed rail (HSR) system connecting the southern part of the state with the Bay Area and Sacramento, with particular emphasis on connecting Los Angeles with San Francisco. The objective of the study was to determine the viability of HSR as an alternative to congested highways and airways in the state. The preliminary feasibility study completed in 1998 cautiously concluded that HSR can work in California but to be successful, the system would require travel times and passenger fares that were competitive with air travel between the Bay Area and Los Angeles (CHSRA 2011).

Senate Bill 1420 created the California High Speed Rail Authority (CHSRA) to replace the Commission at the conclusion of the feasibility study in 1998. The

CHSRA was directed to finalize a system plan (route, technology, and funding) and to undertake final engineering and implementation. Since then, the CHSRA has embarked on a series of activities designed to fulfill the mandate of the State Legislature to implement high-speed train service on the 800-mile system linking San Diego, Los Angeles and the cities of the Central Valley with San Jose, San Francisco and Sacramento.

Following adoption of a Final Business Plan in 2000, the CHSRA recommended the state proceed with implementation of a statewide high-speed train system by initiating the formal state and federal environmental review process through the preparation of a state program level Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA) and a federal Tier I Environmental Impact Statement (EIS) in compliance with NEPA. Although NEPA and CEQA are similar in scope, there are regulatory differences that require additional analyses and documentation to satisfy both federal and state processes.

Program Level Environmental Impact Report/Statement (Tier 1 EIR/EIS)

The program level EIR/EIS commenced when the state Notice of Preparation of an EIR was issued on April 6, 2001 and the federal Notice of Intent to prepare a Tier 1 EIS was published in the *Federal Register* on May 2, 2001. As part of the Program EIR/EIS, a number of project alternatives were evaluated including a No Project Alternative and a High-Speed Train Alternative. Within the High-Speed Train Alternative, there was a range of high-speed train alignment and station location options to be considered. The purpose of the program level High-Speed Train Alignments/Stations Screening Evaluation was to consider all reasonable and practical options within the various defined corridors at a consistent level of analysis and focus the Program EIR/EIS on those alignment and station options that best attain the objectives established by the CHSRA. Intended outcomes of the Tier 1 analysis included adoption of preferred HSR corridors and station locations, which would be subject to refinement during Tier 2, project specific environmental analysis.

Notice regarding the availability and the circulation of the Draft Program EIR/EIS was provided pursuant to CEQA and NEPA requirements. The Draft Program EIR/EIS was released for public review and comment on January 27, 2004 and noticed in the *Federal Register* on February 13, 2004. The initial public comment period was scheduled to end May 14, 2004, but due to public requests, was extended to August 31, 2004. During the Tier 1 environmental process, CHSRA solicited public and stakeholder input through 15 town hall meetings attended by nearly 1,000 people, 17 formal scoping meetings, interagency consultation with 27 interested state and federal agencies, as well as a number of briefings and discussions with other federal and state agencies and regional jurisdictions. Formal testimony was received on the Draft Program EIR/EIS at seven public hearings and through nearly 2,000 letters, postcards, and website postings. Responsible agency and public oral and

written comments submitted by August 31, 2004 were addressed and responded to in the Final Program EIR/EIS.

The CHSRA and the FRA completed a Final Statewide Program EIR/EIS in August 2005 as the first phase of a tiered environmental review process for the proposed California High-Speed Train (HST) system four years after the initial scoping meetings were held in May 2001. Through a comprehensive screening evaluation covering many regions of the state, numerous alignment and station options were identified and selected for analysis in the Program EIR/EIS. The preferred HST alignment and station locations best met the objectives and criteria for minimizing potential environmental impacts while maximizing HST ridership potential and connectivity and accessibility. Stations were to be located in the central business districts where appropriate. These alignment and station options were to be the focus of future project-specific analysis.

Within California's Central Valley, the potential HST impact on agricultural lands was of particular interest and focus in evaluating environmental effects. The Central Valley is one of the most active agricultural regions in the United States (Struglia 2003). The program level EIR/EIS estimated that right-of-way requirements of the HST Alternative, based on the system-wide application of the proposed high-speed train right-of-way, could potentially impact 2,445 to 3,860 acres of prime farmland. When viewed in the context of the overall trend of farmland loss in California of 49,700 acres per year (or nearly 845,000 acres projected to be lost to development by 2020), the right-of-way needs of the HST Alternative represented less than 0.4 percent of the state's total potential farmland loss over the planning horizon. Furthermore, the indirect effect of the HST Alternative on urban growth was estimated to avoid the loss of 4,100 acres of farmlands as compared to the No Project Alternative on a statewide basis by 2035 due to more focused urban development around HSR stations (CHSRA 2005).

The CHSRA made a serious commitment to utilize existing transportation corridors and rail lines to minimize the impacts on California's agricultural and cultural resources. Another key objective was to avoid and/or minimize the potential impacts wildlife refuges and habitat. The use of HSR alignments adjacent to existing railroad alignments and highways was aimed to avoid bifurcation of farmlands, to reduce affects on wildlife and migratory patterns, and to connect to existing urban centers while limiting sprawl effects that could be associated with a greenfield approach. This commitment to utilize existing transportation corridors would later prove to be challenging in the project level EIR/EIS.

The preferred HST Alternative adopted by the HSRA for Central Valley after the program level analysis included an alignment roughly paralleling the BNSF corridor between Merced and Bakersfield, with potential HSR stations at either the decommissioned Castle Air Base in Merced or downtown Merced, in downtown Fresno, and in downtown Bakersfield near the existing Truxtun Amtrak Station. (CHSRA 2005). This alignment was determined at the program level to have lesser

constructability challenges and cultural resource and property impacts than other options considered; however, a greater potential for significant impacts to wetlands and biological species and habitats were identified.

The CHSRA and FRA completed a separate second program EIR/EIS in July 2008 to identify a preferred alignment for the Bay Area to Central Valley segment of the 800-mile HST system. The Bay Area to Central Valley HST Program EIR/EIS resulted in a decision by the CHSRA and FRA to connect the Bay Area and the Central Valley through the Pacheco Pass and to proceed along the Caltrain rail right-of-way from San Francisco to San Jose. In August 2008, the Town of Atherton and others challenged the adequacy of the Bay Area to Central Valley Program EIR/EIS for its compliance with CEQA. The final judgment in the case upheld the Program EIR in many respects, but required additional work in some areas to comply with CEQA.

Nearly a decade after the program level environmental work had begun, the CHSRA circulated a Revised Draft Program EIR in March and April 2010, prepared responses to comments, and then issued a Revised Final Program EIR in August 2010.
Program level environmental analysis identified the general differences in potential environmental consequences between the No Project and the various HST Alignment Alternatives within each study region. Based upon the tiered approach to NEPA, the Revised Final Program EIR supported the selection of preferred alignments and station locations that were certified by the CHSRA Board in September 2010. This decision-making is intended to allow for a more focused analysis of potential impacts of the preferred alternatives as a starting point for project level environmental analysis.

Project Level Environmental Impact Report/Statement (Tier 2 EIR/EIS)

With limited state funding available to advance the HST program, more than three years elapsed between completion of the Tier 1 EIR/EIS documents and commencement of the scoping process for the Tier 2 studies. Voter approval of a state bond issue for high-speed trains in 2008, along with the PRIIA-defined December 31, 2011 deadline for NEPA Notice of Decision and CEQA Record of Decision, renewed interest in advancing HSR planning in California.

An updated November 2008 Business Plan established a phased implementation plan that set forth individual timetables for completion of the environmental documents for each of the eight segments of the 800-mile HST system. The project level EIR/EIS for the Central Valley Merced–Bakersfield segment commenced on February 24, 2009, when a Notice of Preparation was distributed to the State Clearinghouse; elected officials; local, regional, and state agencies; and the interested public. A Notice of Intent was published in the *Federal Register* on March 16, 2009, notifying the public of FRA's intention to prepare an EIS for the Merced to Bakersfield section of the HST System.

The CHSRA and FRA subsequently determined that the environmental impacts of the HST System from Merced to Bakersfield, comprising more than 160 miles of alignment, would be more appropriately assessed in two separate EIR/EIS documents, one from Merced to Fresno and another from Fresno to Bakersfield. A new Notice of Preparation and Notice of Intent for the Project EIR/EIS, amending the environmental process were issued on September 29, 2009, and October 1, 2009, respectively. Other segments of the HST system were noticed during a similar time frame.

As part of the CEQA/NEPA scoping process, the high-speed train alignment and station location options identified by the Tier 1 EIR/EIS documents in the Central Valley and elsewhere were used to initiate public and agency comment. During the Tier 2 scoping process, issues previously thought to be potentially manageable in the first tier study emerged as unacceptable threats to affected species and ecosystems during the more detailed scrutiny in the project level analysis. This included impacts to wetlands as well as community disruption caused by noise and vibration within the urbanized areas of the existing transportation corridors.

The need to acquire and widen existing transportation corridors to accommodate the HST system also severely impacted local communities necessitating elevating the high-speed rail line in many locations adding to the costs of building the system. In order to shorten the length of the line, reduce the cost of construction and minimize noise and vibration in the urbanized areas, several new alignments not studied in the Tier 1 documents were put forward for more detailed investigation. This essentially revisited and reopened the program level analysis and decisions.

One of the alignments put forward as not previously analyzed in the Tier 1 document was a “greenfield” alignment that cut diagonally across farmland plots that were oriented in north-south grids. Although this alignment was the cheapest to construct and had the fewest impacts to urbanized areas, the impacts to the individual farms were considered too severe by local stakeholders who lobbied the CHSRA Board successfully to consider other newer alternatives. In late 2009 and into 2010 a detailed analysis of several newer alternatives was initiated to select a preferred alternative to advance to detailed environmental analysis. A preferred “hybrid” alternative was selected by the CHSRA in 2010 (CHSRA 2010).

The Draft EIR/EIS document for the Merced – Fresno segment was completed and circulated for public review in July 2011, after nearly two and a half (2 ½) years of detailed technical analysis and considerable public outreach. The public comment period was closed on September 15, 2011. The CHSRA is documenting all comments received and preparing responses on the Draft EIR/EIS. The Final EIR/EIS for the Merced to Bakersfield sections are being prepared now and are planned for release in early 2012. The U.S. Army Corps of Engineers and the EPA have asked a series of questions related to the alternatives analysis process used to eliminate some alignment alternatives that appear to have fewer environmental impacts than the alternative recommended by the CHSRA.

EIR/EIS documents for other segments of the HST are also being completed at this time. A Revised Draft Environmental Impact Report (EIR)/Supplemental Draft Environmental Impact Statement (EIS) for the Fresno-to-Bakersfield section of the high-speed train project are scheduled to be released in spring 2012. This additional analysis of alternatives in the Fresno to Bakersfield section will not impact nor will it affect the Draft EIR/EIS for the Merced-to-Fresno section. Rather than issuing a Final EIR/EIS for the Fresno-to-Bakersfield section in January 2012 as previously scheduled, the CHSRA will now use the coming months to further engineer the additional Hanford West Bypass route and new station alternative, conduct the additional environmental analyses needed, seek value engineering opportunities to reduce costs, and make other necessary revisions including those based on comments received from the public and public agencies through October 13, 2011.

Records of Decision for these EIR/EIS documents will likely be obtained sometime during 2012 after over three years of study and engineering repeating many of the studies that were undertaken in the program level document simply because the public pays more attention to a project when it is more imminent.

Elapsed Time

The total elapsed time from the Notice of Intent of the Tier 1 program level EIR/EIS to the time of the expected Record of Decision for the Tier 2 project level EIR/EIS in the Central Valley is expected to be more than 11 years! -As a point of comparison, nearly half of the interstate highway program was constructed between the passage of the *Federal-Aid Highway Act of 1956* and the passage of the NHPA and Transportation Act in 1966 when federal and DOT agencies were required to begin evaluating the impacts of their projects on historic and cultural resources. With the passage of NEPA and related environmental protection law in the early 1970s, the time it took to complete the rest of the interstate system became longer.

Further, the tiered environmental process, which was intended to facilitate project decision-making and allow programmatic actions such as right of way preservation and land use planning to move forward, has not succeeded in achieving those desired outcomes. Rather, each decision and analysis performed as part of the program level EIR/EIS needed to be revisited during the project level EIR/EIS.

OTHER CONSIDERATIONS

The length of time to complete planning, environmental approval, permitting, design and construction of large infrastructure projects usually also spans several Presidential and Gubernatorial administrations along with varying terms of Congress and state legislatures. The interstate highway program enjoyed bi-partisan support for the passage of the Federal Aid Highway Act of 1956 and support that continued over the three decades to build out the system. The intercity passenger and high-speed rail program does not enjoy such broad support. In fact, the annual appropriation process

for the National Railroad Passenger Corporation (Amtrak) has become a political issue in partisan squabbles about fiscal responsibility and the role of Government.

Since the creation of Amtrak in 1971 under the Administration of President Richard M. Nixon, several Presidents have tried to zero out Amtrak's operating budget citing the need to eliminate continuing federal subsidies and questioning the role of government ownership and operation of intercity passenger trains. Arguments about the role of Government operating trains are reminiscent of the debates on the federal role in building and maintaining an interstate highway system during the 1930s and 1940s.

In today's highly-charged partisan political atmosphere, it is not uncommon for investment decisions made by one Gubernatorial Administration to be reversed by the next incoming Administration. In well publicized reversals of established public policy, the newly elected Governors of Florida, Ohio and Wisconsin reversed course on intercity passenger and high-speed rail development in their states by cancelling programs and returning the associated federal funding awarded to their states for those programs to the USDOT. Ever longer planning periods make major infrastructure programs increasingly susceptible to such political shifts over time.

In addition, the process orientation and public participation element of NEPA has also spawned a cottage industry of law firms that specialize in NEPA litigation on behalf of litigants who oppose projects. With NEPA requiring substantive public involvement and comment on the EIS documents prepared by states and local agencies for the federal sponsoring agency, the balance of power seems to have shifted from state transportation planners and engineers to community activists.

There are well organized and funded special interest groups who oppose urban and intercity passenger and high-speed rail projects on the basis of political philosophy. It is the intent of these groups to stall or call into question the assumptions and results of the numerous studies undertaken to satisfy the NEPA process or local requirements such as CEQA and the California requirement for the CHSRA to prepare and regularly update business plans.

The shifting of the balance of power from state transportation planners to community activists and special interest groups has effectively lengthened the time required to achieve informed political decision. And often, many of the consensus decisions are made for politically expedient reasons to advance projects and minimize the threats of nuisance lawsuits designed to thwart progress and cause costs to escalate to levels that no longer support positive benefit/cost ratios contained within business plans. And even after a consensus decision has been made, a change in Administrations may reverse prior political decisions further delaying or cancelling projects. The interstate highway program did not suffer from these underlying conditions in its early years of development. But the intercity passenger and high-speed rail program does.

Organized Opposition to the High-Speed Rail Program

Several studies prepared by the Volpe Transportation Center of the USDOT and the Government Accountability Office (GAO) have inflamed the political debate by questioning the viability of rail investments generally and high-speed in particular.

A report was prepared by the Volpe Transportation Center in 1989 (Pickrell 1989) for what is today's Federal Transit Administration (FTA) to evaluate urban rail projects and make recommendations on forecasting and planning techniques to improve the federal funding and selection process. This study became known colloquially as the Pickrell Report.

As a backdrop to the study, there was a concerted effort by some conservative legislators and the Reagan Administration in the 1980s to kill the urban rail New Start program and to zero out Amtrak's budget. The Pickrell Report was prepared specifically to provide ammunition for those opposed to urban rail transit investments although the explicit objective of the report was for other purposes. However, critics of the New Start program used the report to evaluate whether investment in urban rail systems by the federal government should be made or not. The report showed that every New Start urban rail system built in the 1980s cost more than was budgeted and had ridership far below projections. These findings were cited by anti-rail activists as proof that urban rail transit was a poor investment.

Subsequent to the publication of the Pickrell Report, there was a substantial effort by the Cascade Policy Institute, Cato Institute, The Public Purpose, Buckeye Institute, the Heritage Foundation, the American Highway Users Alliance and others to send a cabal of rail opponents around the country to exploit the Pickrell Report's findings (CFTE 2011). Every city proposing a New Start rail program had to deal with these speakers, all of whom cited the Pickrell Report and all concluded that rail transit investment was not justified.

The Pickrell Report was criticized and discredited because it simply reviewed ridership forecasting and cost estimating in the early stages of project planning and compared these early estimates with construction costs and ridership a few years after the systems were opened. The Portland light rail transit project was used to illustrate how the Pickrell Report targeted early, outdated documents for criticism and ignored the actual decision matrices of local decision makers and compounded the misrepresentation by the choice of inappropriate comparison years. It was shown how the use of readily available data on boardings and operating costs for the various projects, instead of reconfigured data, would have warranted different conclusions from those expressed in the Pickrell Report.

The GAO prepared a report in 2009 entitled "*High Speed Passenger Rail: Future Development Will Depend on Addressing Financial and Other Challenges and Establishing a Clear Federal Role" The* GAO report says:

> *Rider forecasts and cost estimates are inherently uncertain and subject to some degree of inaccuracy simply because they are trying to predict future circumstances. However, analyses and research on the accuracy of rider forecasts and cost estimates for rail infrastructure projects have found that a systematic problem and incentive to be optimistic may exist—that is, actual riders are more likely to be lower than forecasted, while actual costs are more likely to be higher than estimated.*

The GAO Report cites the same discredited studies of 1980s urban rail transit projects, European rail projects and uses language identical to the Pickrell Report from 1989 to describe the "optimism bias" in feasibility studies without acknowledging the extraordinary efforts to remove this bias in contemporary study results. And, as we find, Don Pickrell was consulted by the GAO in the preparation of its report. According to the Pickrell Report:

> *...the systematic tendency to overestimate ridership and to underestimate capital and operating costs introduces a distinct bias toward the selection of capital-intensive transit improvements such as rail lines.*

Those words were first written in 1989 and are eerily similar to the GAO Report prepared in 2009.

The GAO study (and Pickrell in1989) did not look at the ridership forecasting model assumptions or test the forecasting protocols by changing the model assumptions and then seeing if the revised model results in a more accurate forecast. It simply looked at an early forecast and then reported actual ridership. Forecasts are based on future year conditions; a new system needs time to mature and grow into its future year forecast. One of the examples often cited is the English Channel Tunnel project and operation of EuroStar high-speed trains linking London, Brussels and Paris. At first glance, the EuroStar forecast looks optimistic when compared to actual ridership for the first several years of operation. The ridership forecast assumed the British would build its segment of the high-speed rail line connecting St Pancras Station in Downtown London with the Tunnel. The EuroStar trains started operating in the Tunnel in 1994 but the British high-speed rail line segment between the Tunnel entrance on the English Coast and St Pancras Station was not completed until 2007, thirteen years later than originally planned. As would be expected, the lack of this important system link resulted in EuroStar ridership was significantly less than had been forecasted for the first 13 years of operation without the segment in place.

Shifting Political Climate

Today the Obama Administration's high-speed rail program is undergoing intense scrutiny by a wary Congress. The GAO Report and the subsequent political strategy repeat the themes and schemes of the 1990s where the same cabal of rail opponents is sent around the country to exploit the GAO Report's findings. Special interest