

## Study 1 Draft Scope of Work

CalEPA Contract with Regents of the University of California; Institute of Transportation Studies

Draft 12/18/19

**Purpose:** Governor Newsom affirmed the state's goal of achieving carbon neutrality by 2045 in the 2019 Budget Act. To achieve our carbon neutrality goal, the state will need to reduce dramatically our greenhouse gas emissions while permanently removing carbon from the atmosphere. These efforts will include: managing strategic statewide reductions in fossil fuel demand and supply; electrifying key sectors and end uses; and making significant investments in transitioning the transportation sector and the electrical grid to zero carbon emissions. These shifts will need to take place alongside targeted investments in communities and in the state's workforce to ensure that this transition maximizes equity, resiliency, health, and environmental quality across the state.

The transportation sector is an especially important priority for the state. When including fossil fuel extraction and refining, the transportation sector accounts for half of California's greenhouse gas emissions. Additionally, California's transportation sector relies primarily on petroleum fuels, significant amounts of which are produced and sourced from within the state.

Through the 2019 Budget Act, the Newsom Administration funded two studies to identify strategies to reduce the demand for and supply of fossil fuels, with the goal of dramatically reducing emissions across the transportation sector. The purpose of this agreement is to produce one of two comprehensive, integrated studies that identify paths to significantly reduce transportation-related fossil fuel demand and emissions, and, in parallel, manage a strategic, responsible decline in transportation-related fossil fuel supply. This agreement's study will focus on managing the decline in demand.

The two integrated studies will share common guiding principles and will incorporate common workforce and affordability considerations. The studies will also share aligned scenarios and strategies that the state, local governments and others may consider and implement to support achieving the state's carbon neutrality goal. To the extent possible and relevant to the unique characteristics of the state's local and regional economies, the studies shall also draw upon lessons learned from other models of economic and social transitions.

The guiding principles underlying each of the two studies are:

- a. Equity. Equitably distribute all benefits associated with achieving carbon neutrality. Achieve environmental justice and shared prosperity in the context of a changing climate.

- b. Health. Improve and protect public health. Prioritize health, safety, and opportunity for the state's most vulnerable and disadvantaged residents, and for communities disproportionately burdened by pollution.
- c. Environment. Improve and protect environmental quality across the state.
- d. Resilience and Adaptation. Develop resilience and adaptive capacity locally, across the state.
- e. High Road Jobs. Foster sustainable and diversified local and regional economies, and prioritize the creation of accessible high quality jobs for all communities, particularly the state's most vulnerable and disadvantaged residents and resource-dependent communities.
- f. Affordability and Access. Deliver affordable, accessible, and reliable non-fossil fuel options and technologies.
- g. Minimize Impacts Beyond Our Borders. Minimize emissions leakage and external costs beyond the state's borders, to the maximum extent possible.

CalEPA and its interagency partners will facilitate shared and equal access to decision making and related processes during the development of the studies.

### Study 1 Reducing Transportation-Related Fossil Fuel Demand and Emissions

For purposes of the two studies, carbon neutrality means achieving a balance between sources and sinks of greenhouse gas (GHG) emissions. The focus of the studies will be to evaluate how to both reduce emissions from fossil energy and industrial sources and how to increase sinks.

This study shall be coordinated and integrated with the other study referred to above, here called "Study 2," and shall not duplicate the work of Study 2. Study 2 will focus on strategies to manage the decline in transportation-related fossil fuel supply and will be led by researchers at the University of California, Santa Barbara ("UCSB Team").

The two studies will coordinate the development of potential transportation-related GHG emissions trajectories in California and will develop a common set of scenarios that reduce transportation-related fossil fuel demand, and, in parallel, manage the decline in transportation-related fossil fuel supply.

**Focus Areas:** The contractor shall expend a majority of its time and effort in investigating these Focus Areas as elements of a roadmap to achieve carbon neutrality by 2045:

1. **Evaluate market characteristics of the transportation sector and policies already underway and/or under consideration** for California, including:
  - a. Current market characteristics and trends: global, regional and local trends in prices for and access to zero-emission vehicles between now and 2045; global trends in battery capacity/electric vehicle range; current number and percentage of zero-emission vehicles in light, medium and heavy duty fleets; length of time of ownership of internal combustion

engine vehicles; sales data from primary and secondary markets, to the extent possible; number of and geographic need for electric vehicle charging stations, hydrogen fueling stations, and gasoline stations; gasoline and electric prices; observed current and potential future barriers to access to and the selection of zero emission vehicles; factors driving changes in travel behavior; and factors affecting vehicle and ride sharing and public transit ridership options and cost

- b. Current employment characteristics and trends: existing jobs in terms of (1) number (by occupation and industry); (2) quality (e.g., wages, benefits, autonomy, voice); and (3) access (e.g., demography, geography, educational status, and educational or career pathways) across the transportation sector.
  - c. Current relevant policies: fuel standards; vehicle mandates and incentive programs, vehicle trade-in and rebate policies; incentives for developing refueling infrastructure for alternative fuels (electricity and hydrogen); purchasing and finance criteria; transportation network company regulations; land use policies; active and public transportation policies
2. **Scenarios for reducing transportation-related fossil fuel demand and emissions** that include all the strategies listed in sections 3 through 6. Analysis should include:
- a. Indicative milestones or targets, e.g., for fleet composition, transit ridership, and other influential indicators; where possible, these should be benchmarked against existing policies and goals
  - b. Reductions in transportation fuel demand corresponding with milestones and targets outlined above
  - c. Changes in travel demand and behavior due to changes in housing costs, supply and location; land use; transportation infrastructure; emergence of new mobility options; and other changes in society, technology and policy
  - d. Assessments of the health, social, environmental and economic benefits associated with a dramatic reduction in vehicle emissions across state, regional and local geographies, and with an overall reduction in vehicle miles traveled
  - e. Assessment of transportation access and needs, particularly for vulnerable communities and mobility disadvantaged travelers
  - f. Where possible, scenarios will include the net effect of combinations of levels of ambition in each strategy (i.e., different pathways to achieve zero or very low emissions)
3. Strategies to **accelerate the adoption of light-duty zero-emission vehicles (ZEVs)**, including:
- a. The role of purchase incentives and mandates for new and used ZEVs (e.g., applicability or eligibility; amount; timing, duration, and quantity)
  - b. Greenhouse gas emission performance standards and feebate policies
  - c. Incentives for dealers and automakers to expand availability of ZEVs
  - d. Market development, model availability and range

- e. Expanded charging (and hydrogen fueling) infrastructure and impacts on existing infrastructure, including electric and fossil fuel supply infrastructure
  - f. Strategies to transition existing light-duty fleets with a focus on those owned and used by low-income residents and the workforce
4. Strategies to **reduce vehicle miles traveled**, including:
    - a. Strategies available to state and local governments to improve housing availability and affordability, and to focus economic activity near existing housing
    - b. Strategies to develop land-use policies and provide transportation alternatives
    - c. Strategies to increase public transit ridership
    - d. Strategies to increase active transportation, e.g., walking and bicycling
    - e. Strategies that consider the role of technologies including connected and automated vehicles, shared mobility, and micromobility services
    - f. Strategies that consider roadway and vehicle pricing mechanisms
    - g. Strategies that encourage ride sharing and vehicle sharing (greater load factors)
  5. Strategies to **accelerate use of alternative fuel sources and similar technologies** for light-, medium-, and heavy-duty vehicles and other modes of transportation (e.g., aviation, rail and marine)
  6. Strategies to **accelerate the transition to zero-emission medium- and heavy-duty vehicles (including off-road vehicles regulated by the state) and related freight infrastructure** (e.g., railyards, shipyards, ports and distribution and logistics centers)
  7. Strategies to **increase economic opportunity, high quality job creation, and integrated skill delivery**, including:
    - a. How the above scenarios (e.g., VMT reduction, ZEV adoption, alternative fuels scenarios, and new mobility and automation in transportation) will affect employment in industries including logistics, port operations, manufacturing, construction, operations and maintenance.
    - b. The role quality transportation will play in providing access to jobs and supporting other careers.
    - c. What projected labor market indicators (e.g., job numbers, quality, and access) for each milestone in the transitions identified above will tell us about the research and/or policies necessary to advance economic opportunity for all Californians, especially those in disadvantaged, low income and vulnerable communities.