Per California Code of Regulations, title 2, section 548.5, the following information will be posted to CalHR's Career Executive Assignment Action Proposals website for 30 calendar days when departments propose new CEA concepts or major revisions to existing CEA concepts. Presence of the department-submitted CEA Action Proposal information on CalHR's website does not indicate CalHR support for the proposal.

A. GENERAL INFORMATION

1. Date

2025-07-02

2. Department

California Air Resources Board (CARB)

3. Organizational Placement (Division/Branch/Office Name)

Office of Information Services (OIS)

4. CEA Position Title

Chief Technology Officer, C.E.A. Level A

5. Summary of proposed position description and how it relates to the program's mission or purpose. (*2-3 sentences*)

The Chief Technology Officer (CTO) is a key executive at OIS. Their responsibilities include setting the strategy and policies for the IT infrastructure, ensuring that the network, servers, and storage are operational and secure around the clock, every day of the year. It should be noted that this role is a significant subset of IT operations that report to the Chief Information officer.

Additionally, the CTO is responsible for innovation, product development, and adopting new technologies. They create policies that govern CARB's use of both existing and emerging technologies and are aligned with CalEPA and CA Department of Technology's (CDT) current and future policies. The CTO ensures that CARB's technology infrastructure aligns with the organization's current and future business goals. They also lead the development and implementation of new technologies to meet CARB's evolving needs.

6. Reports to: (*Class Title/Level*)

Chief Information Officer, C.E.A. Level B

7. Relationship with Department Director (*Select one*)

☐ Member of department's Executive Management Team, and has frequent contact with director on a wide range of department-wide issues.

☑ Not a member of department's Executive Management Team but has frequent contact with the Executive Management Team on policy issues.

(*Explain*): The CTO is an executive who works with the Executive Management Team to align the technical infrastructure with the business goals and objectives.

8. Organizational Level (*Select one*)

☐ 1st   ☐ 2nd   ☑ 3rd   ☐ 4th   ☐ 5th (mega departments only - 17,001+ allocated positions)

B. SUMMARY OF REQUEST

9. What are the duties and responsibilities of the CEA position? Be specific and provide examples.

Under the general direction of the Chief Information Officer (CIO), the Chief Technology Officer (CTO) implements the CA Air Resources Board's (CARB) Information Technology vision through planning, organizing, and directing activities associated with infrastructure and technical solutions activities. The CTO establishes infrastructure-related policy, plans, organizes, and directs the overall operation of the CARB's technology infrastructure by developing, maintaining, supporting, and optimizing multiple critical and highly complex information technology (IT) disciplines, particularly network infrastructure, server infrastructure, data communications, telecommunications, and enterprise systems both private cloud and public cloud environments. The CTO provides strategic and tactical technical direction and cross-domain expertise, at deep technical levels and directs and evaluates the activities of highly technical IT staff, to resolve hardware and software problems timely and accurately.

The CTO oversees CARB's technology architecture, infrastructure and digital solution delivery and operations, and the development and implementation of applications, cloud policies and strategies, and technical support– all of which play a critical role in supporting the mission of CARB:

1. Technology Strategy and Innovation: Developing and executing the technology roadmap, ensuring it aligns with business needs and future growth.
2. Collaboration with CalEPA and CDT: Collaborating with other CTOs within CalEPA to shape the shared compute environment to meet CARB's needs. Additionally, working with CDT and CTOs from other large departments to shape proposed CDT policies and mandates.
3. Security and Infrastructure: Ensuring that CARB's technology infrastructure is secure, scalable, and reliable, protecting it from constantly evolving cyber security threats.
4. Data Management: storing, organizing, securing, and utilizing an organization's data to ensure its accuracy and accessibility, allowing for analysis and informed decision-making within the busines
5. Collaboration with CARB Executives: Working closely with other senior leaders to align technology initiatives with overall business strategies.
6. Leadership and Management: Leading the technology team (including managers, engineers, developers, Air Pollution Specialists, and other IT professionals) and managing technology resources to adapt to constantly evolving needs.
7. Research and Development: Leveraging emerging trends and innovations in technology and integrating those advancements into CARB's offerings or processes.
8. Solution Development: Overseeing the development and enhancement of technological solutions, services, or platforms.
9. Budget Management: Managing the technology budget, balancing cost-effective solutions with necessary investments for future growth.

B. SUMMARY OF REQUEST (continued)

10. How critical is the program's mission or purpose to the department's mission as a whole? Include a description of the degree to which the program is critical to the department's mission.

☑ Program is directly related to department's primary mission and is critical to achieving the department's goals.

☐ Program is indirectly related to department's primary mission.

☐ Program plays a supporting role in achieving department's mission (i.e., budget, personnel, other admin functions).

Description: Information Technology (IT) at the California Air Resources Board (CARB)Information Technology (IT) is critical to the California Air Resources Board (CARB) and its mission to protect public health and the environment. IT also supports the broader mission of the California Environmental Protection Agency (CalEPA), under which CARB operates. CARB's primary goal is to reduce air pollution and improve air quality across California. IT plays a fundamental role in achieving these goals in the following areas:1) Data Collection and Analysis: CARB relies extensively on data to monitor air quality, emissions, and environmental trends. This data is collected through air monitoring stations, sensors, satellite systems, and other technologies. IT systems are essential for:Collecting, storing, and processing vast amounts of environmental data.Analyzing data to track pollution sources, evaluate the effectiveness of air quality regulations, and predict future air quality levels. Ensuring the accuracy and timeliness of reports for policymakers and the public. 2) Modeling and Forecasting: IT supports CARB's ability to use complex air quality modeling and forecasting systems that simulate the movement and interaction of air pollutants. These systems are critical for:Identifying regions with high pollution levels.Developing targeted interventions and policies.Predicting the impact of new regulations or environmental events (e.g., wildfires) on air quality. 3) Regulatory Compliance and Enforcement: CARB enforces air quality standards and vehicle emissions regulations using sophisticated IT tools to:Track compliance from industries, businesses, and individuals. Monitor emissions from various sources, including vehicles, industrial facilities, and power plants. Maintain detailed records of inspections, violations, and enforcement actions. 4) Public Engagement and Transparency: CARB uses digital platforms, websites, and apps to:Provide the public with access to real-time air quality data. Educate residents about pollution levels in their areas. Gather public input on proposed regulations and policies. Promote transparency in decision-making processes and regulatory outcomes. 5) Policy and Decision Support: IT enables CARB to support decision-making by providing data-driven insights. Advanced technologies like artificial intelligence and big data analytics allow CARB to:Assess the potential impact of new policies and regulations. Evaluate the effectiveness of air quality improvement strategies. Facilitate coordination with other government agencies, research institutions, and stakeholders.6) Environmental Justice: As part of its mission, CARB aims to reduce air pollution in disadvantaged communities, which often experience higher pollution levels. IT tools help CARB:Identify vulnerable communities with high pollution levels. Monitor the success of air quality improvement programs in these areas. Develop strategies that leverage technology to address environmental health disparities.7) Supporting the Broader CalEPA Mission: As a key component of CalEPA, CARB plays an important role in supporting the broader mission of environmental protection and public health improvement across California. IT is an integral part of achieving these overarching goals.

B. SUMMARY OF REQUEST (continued)

11. Describe what has changed that makes this request necessary. Explain how the change justifies the current request. Be specific and provide examples.

As the California Air Resources Board (CARB) is tasked with increasingly complex responsibilities and expanding legislative mandates, the IT environment continues to grow and become more complex. This complexity has resulted in an expanded IT project portfolio of over $133M, which necessitate a Chief Technology Officer (CTO) to drive more complex solutions and ensure these obligations are met efficiently and effectively.

Increased responsibility and legislative mandates have made the role of a CTO necessary, with the following examples that justify the current request for this position:

1) Growing Data Demands and Regulatory Complexity: Over the years, CARB has seen an expansion of regulatory requirements and an increase in the amount of environmental data it collects, analyzes, and uses to enforce air quality standards. With the state legislature continuously enacting new environmental laws and regulations, the volume of data and the complexity of systems needed to track, analyze, and report on these regulations have grown significantly. For example:The Advanced Clean Cars Program and California's Zero-Emission Vehicle mandates require real-time tracking of vehicle emissions data, charging infrastructure, and market performance. The data must be aggregated and analyzed across multiple regions and sources, which requires advanced IT infrastructure. The California Air Quality Data needs to be accurate, accessible, and updated frequently. Managing this data, especially when new pollutants are identified or air quality standards evolve, requires dedicated IT leadership. The CTO would ensure that new policies, governance structures and the technology infrastructure is designed and maintained to manage these growing data needs, including data governance, data integrity, and compliance with state and federal mandates like those outlined in the California Global Warming Solutions Act (AB 32) and the California Clean Air Act.

2) Emerging Technologies and Innovation: New technologies are rapidly evolving and being incorporated into CARB's efforts to improve air quality. These include advanced sensors, artificial intelligence (AI) for predictive modeling, and machine learning to optimize emissions reduction strategies. In response to state legislative mandates like SB 1000 (Climate Adaptation and Resilience Planning) and AB 617 (Community Air Protection Program), CARB must adopt, implement, and integrate these technologies effectively. For example:AB 617 mandates more localized air quality monitoring and requires the development of community-level air quality monitoring systems. This initiative requires advanced data analytics platforms, new sensor technologies, and seamless integration with existing infrastructure to track pollution sources and take corrective actions. CARB is also tasked with ensuring the electrification of transportation, which requires ongoing technological advancements in vehicle-to-grid communications and data systems, as well as supporting infrastructure for electric vehicle (EV) adoption. The CTO would need to develop / implement new policies and oversee the integration of advanced technologies, ensuring that the agency is keeping pace with innovation while also maintaining system reliability and efficiency. Without a CTO, CARB could struggle to develop the policy framework and keep pace with rapidly evolving tech solutions and innovations that are critical to meeting the state's ambitious environmental goals.

3) Increased Cybersecurity and Data Protection Needs: As the volume and sensitivity of data managed by CARB have grown, so too have the risks associated with data breaches and cyberattacks. Given the increasing number of cyber threats targeting state agencies and environmental organizations, CARB must ensure that its IT infrastructure is both secure and compliant with data privacy laws like the California Consumer Privacy Act (CCPA) and federal standards for protecting environmental data. For example:If CARB were to suffer a breach involving sensitive air quality data or information on polluting industries, it could lead to severe public trust issues and legal consequences. CARB handles real-time air quality data which must be accessible to the public, government agencies, and other stakeholders without compromising security or availability. The CTO would be responsible for designing and implementing robust cybersecurity policies, ensuring CARB's compliance with both state and federal regulations, and mitigating risks associated with the growing digitalization of environmental data.

4) Interagency Coordination and Reporting: CARB works alongside various state and federal agencies to achieve its environmental goals. The legislative mandates for collaboration and transparency across agencies, such as sharing real-time data on air pollution levels or emissions reduction strategies, require sophisticated IT infrastructure to ensure seamless communication and integration. For example:The California Environmental Data Exchange Network (CEDEN) allows CARB to share water quality and air pollution data with other agencies like the State Water Resources Control Board. IT systems that facilitate this interagency coordination need to be scalable, secure, and up-to-date. With CARB's expanding role in state and national policy leadership, the CTO would ensure that CARB's policies and technological systems are ready to support and adapt to this ongoing interagency collaboration.

5) Increased Focus on Transparency and Public Engagement: In alignment with California's public accountability and environmental justice goals, CARB is under increased pressure to ensure transparency in its data, decision-making processes, and regulatory actions. The public and local communities demand timely access.

C. ROLE IN POLICY INFLUENCE

12. Provide 3-5 specific examples of policy areas over which the CEA position will be the principle policy maker. Each example should cite a policy that would have an identifiable impact. Include a description of the statewide impact of the assigned program.

The CTO will be critical in establishing, developing, and implementing new policies to develop, deliver and secure strategic technology architecture, infrastructure, and digital services. Examples of areas which the CTO will be the principal policy maker are as follows:

Technology Infrastructure: The CTO is designated as the principal policy maker in technology infrastructure policy. This specific policy area encompasses the development, implementation, and management of strategies to protect the technology infrastructure and CARB operations. This includes ensuring the security and availability of communications infrastructure (network, voice, and video), compute infrastructure (on-premises and cloud compute and storage), and endpoints (desktops, laptops, tablets, and smartphones). Impact: As the primary technology advisor, the CTO's responsibilities extend to overseeing hardware, commercial software, and cloud services, with a significant focus on technology lifecycle refresh policies and budget.

Cloud Adoption and Integration: As part of modernization efforts, the CTO would oversee the policy for the adoption of cloud technologies. This policy would guide the migration of state services, applications, and data to secure cloud environments, ensuring a smooth and secure transition. It would include policies on cloud provider selection, data residency requirements, cloud security standards, and disaster recovery. Impact: The adoption of cloud services can lead to cost savings, improved scalability, and flexibility for state services, while also enhancing disaster recovery and accessibility. The statewide impact includes:Increased operational efficiency across state agencies by streamlining IT infrastructure and systems. Reduced capital expenditure on on-premises servers and data centers. Ensuring data privacy by adhering to state-specific regulations on where data can be stored and processed. Example: A cloud policy requiring all new state projects to use cloud-first approaches and set standards for data encryption, backup, and access control in cloud environments.

Artificial Intelligence (AI) and Automation: The CTO would establish an AI ethics policy that governs the responsible development and deployment of AI and automation technologies. This policy would set standards for the ethical use of AI, ensuring fairness, transparency, and accountability in AI models used by the state. It would also cover issues such as bias prevention, data privacy, and the explainability of AI decisions. Impact: AI is increasingly being used to generally enhance decision-making. By creating a policy that governs the ethical use of AI, the CTO ensures that AI systems are transparent and do not perpetuate systemic biases, which could harm vulnerable populations.

Environmental Data Management and Analytics: The CTO would be the principal policy maker for Environmental Data Management and Analytics. This policy area focuses on the collection, storage, analysis, and sharing of large volumes of environmental data, such as air quality measurements, emissions data, and climate impact information. The CTO would ensure that CARB's data systems are robust, secure, and capable of supporting decision-making processes while adhering to state regulations and transparency standards. Impact: The management of environmental data is crucial to CARB's mission of improving air quality, reducing emissions, and mitigating climate change. The statewide impact includes:Informed policy decisions: By ensuring the availability of accurate and up-to-date data, this policy will support the development of more effective air quality regulations and climate action programs. Public transparency: The policy will facilitate the sharing of real-time environmental data with the public, enhancing transparency and allowing Californians to track air quality and emissions reductions. Improved environmental outcomes: Efficient data management and analysis will enable CARB to better monitor environmental trends, identify pollution hotspots, and evaluate the success of air quality improvement measures. Enhanced collaboration: The policy would also set guidelines for data sharing with other agencies, local governments, and environmental organizations, improving coordination and action across the state. Example: A statewide environmental data management policy developed by the CTO, requiring CARB to implement a centralized data platform for air quality and emissions data. The policy would:Establish standardized data formats for emissions monitoring across various sectors (transportation, industrial, agriculture, etc.). Implement cloud-based storage solutions to support scalability and real-time access to environmental data. Define data-sharing protocols for making air quality data publicly accessible through web portals and open data initiatives. Set guidelines for advanced analytics to process and model data, helping to forecast pollution trends and evaluate the impact of air quality programs. This policy would be pivotal in ensuring that CARB can effectively manage environmental data to meet regulatory requirements, make data-driven decisions, and engage the public in efforts to reduce air pollution and combat climate change.

C. ROLE IN POLICY INFLUENCE (continued)

13. What is the CEA position's scope and nature of decision-making authority?

The CTO holds significant decision-making authority, primarily concentrated on the organization's technology landscape, encompassing both operational technology frameworks and security measures. This includes steering the strategic technology direction in alignment with federal, state, and organizational policies, ensuring a compliant and efficient operation.

Further responsibilities involve directing the technology service management functions crucial for business continuity, disaster recovery planning, and incident response management, as well as overseeing IT demand forecasting and capacity planning. The CTO is responsible for developing and implementing enterprise-wide technology policies, standards, and strategies, making key policy-level decisions on technology adoption that align with CARB's strategic goals. This role also encompasses leadership and management of technical staff, contractors, and vendors, including talent management, budgetary responsibilities, and fostering an organizational culture of innovation and productivity. Additionally, ensuring strict compliance with legal and regulatory requirements, like the implementation of a Zero Trust architecture, is a significant part of the CTO's role, securing CARB's technology infrastructure across network, voice, video, computing, and mobile devices, which are essential for the organization's operations. The CTO is responsible for ensuring that the organization's technological infrastructure is aligned with its business goals, secure, and adaptable to future challenges.

14. Will the CEA position be developing and implementing new policy, or interpreting and implementing existing policy? How?

The CTO will develop and implement new policy as well as interpreting and implementing existing policy, depending on CARB's needs, the regulatory environment, and the strategic goals set by leadership. The CTO plays a dual role in shaping the direction of technology within an organization and ensuring that the organization's technology-related practices align with existing regulations, laws, and CARB's organizational goals.

The CTO may also work on policies related to sustainable technology, data collection standards, and how technology can support CARB's regulatory and research functions. Additionally, the CTO will likely oversee the implementation of these policies by guiding IT teams, ensuring that technical infrastructure aligns with CARB's overall strategy, and that the agency's technology solutions comply with both state and federal regulations. The CTO will need to ensure that the IT systems, applications, and infrastructure comply with both existing environmental regulations and broader state policies on technology and data privacy. This could involve overseeing the implementation of policies related to IT governance, data management, cybersecurity, and compliance reporting.

The CTO will collaborate with various stakeholders within CARB, such as the executive leadership team, legal and compliance departments, and technical teams, to both shape new technology-related policies and review how existing policies are being implemented. The CTO will also monitor industry best practices, technological advancements, and legal changes to ensure that CARB's policies remain relevant and forward-thinking. Implementing both new and existing policies will likely require the CTO to establish clear guidelines, conduct training, integrate new technologies or platforms, and maintain rigorous oversight of all technology-related initiatives.

The CTO will also meet with the CA Department of Technology and other CTOs from large departments to shape future statewide policies.