Building Description and Design Requirements

**General Description:**
The new City Hall will be a multi-functional building that serves the municipality’s administrative, judicial and public safety functions. Specifically, it will house the executive offices of the Mayor, City Administrator, and key departments including Administrative Services, Communications, Community Development and Tourism, Recreation, Planning, Transportation, Public Services, Legal, Municipal Court, Fire Administration and Police. The city desires to achieve a high-quality design that provides a safe, secure, highly functional facility that allows the local government to serve its citizens in a manner that endures for generations. To fulfill this mission, the new facility will be constructed as an Essential Facility, per the International Building Code and house an Emergency Operations Center (EOC) for the area. Thus, the government will continue to function and serve its citizens during and after times of duress.

The new building will be designed for growth in the near term and flexibility over the long term; with emphasis on a more functional, secure, and intuitive layout for the municipal employees, volunteers, and citizenry. The Administration envisions the new building and grounds as a place the public and employees enjoy -- a place where they want to be -  a timeless building that embodies the persona of the community: warm, welcoming, friendly, yet progressive. The teams will need to also consider how their design will work in 50 years’ time using worst case climate predictions.

**General Design Requirements:**
1. Disaster Management and Durability: Portions of the building including the communications/operations center, 50% of the office space, and the data center should be designed and constructed in a manner that allows it to serve as a functional Emergency Operations Center (EOC) during man-made and natural disasters, so that key personnel can continue to provide services to the public during a disaster and its aftermath.
2. Safety & Security: The building should provide a safe and secure environment where daily city hall business, police, fire and legal proceedings can be conducted.
3. Sustainability: The design and construction should take into account the long-term life cycle issues of the building so that the success of the building not only depends on initial systems and materials decisions (first costs) but also on the proper long-term operation and maintenance over the life of the facility.
4. Energy Efficiency: The building should be Near Net Zero
5. Health and Wellness: The building should provide an indoor environment that is high quality allowing employees to be comfortable and productive. The architecture of the building should be creative and innovative. Also, the systems responsible for indoor air quality should provide consistent and controllable temperature as conditions change based on location in the building, activity and time of day.
Resiliency
A main feature of the competition this year will be resiliency during emergencies while maintaining a high quality indoor environment with a minimal environmental impact during normal operations. To ensure adequate operations during an emergency scenario, the building must meet the following requirements:

- When operating as an EOC, the communications/operations center, data center and 50% of the office spaces should remain functional while occupied continuously for 14 days
- Potable water storage for 14 days of operation
- Energy storage for 14 days of operation (difference must be made up using local generation, dedicated operational strategies, and energy efficiency measures)
- No on site fossil fuel storage (i.e. diesel/gas generators are not allowed)
- As noted above, the building does not have to be net-zero during normal operation; however, preference will be given to submissions which are as close to net-zero as possible.

Detailed Design Requirements:
90,000 sf Town Hall (new construction)

- 6,000 sf holding cells, evidence storage & detainee processing (can be occupied 24/7)
- 3,000 sf fitness center
- 6,000 sf locker room
- 55,000 sf open and closed office space (including court, 5,000 sf occupied 24/7)
- 9,000 sf general storage
- 7,000 sf meeting & training rooms
- 1,000 sf public waiting rooms
- 1,000 communications/operations center room (primarily for emergency use)
- 1,000 sf data center (medium density data center)
- site area will have 20,000 sf open parking area

Location: San Diego, California

Specific User Groups Requirements:
The following user groups within the City Hall have specific use requirements for spaces not categorized above:

- Police Department: A combination of offices, staff work areas, staff training areas, evidence processing and storage area, sally port and detainee processing area. Department is considered limited access for police department personnel. The department must be secure from other areas of City Hall.
- Community Development & Tourism: Ideally this department would consist of a flex space for a meeting room and/or workstation, surrounded by smaller offices.
- Municipal Court: The office area of this department would ideally an open floor plan with workstations. This department is “non-essential” during an emergency or disaster event.

Additionally, the following user groups require a combination of open spaces and workstations:

- Executive, Communications, IT, Legal, Planning, Recreation, Transportation and Fire Departments
- Administrative Services
- Public Services
Health and Wellness in the Indoor Environment

All spaces are to be provided with adequate ventilation and required to maintain thermal comfort criteria based on the activities within each space type. The project may incorporate thermal zoning with an understanding that the program of the building may be flexible in order to accommodate the thermal comfort needs of the individual occupants. Exceptions to this criteria during emergency operations is permitted with provided reasoning and a description of the assumptions during such cases. Refer to the Resiliency section for additional information regarding emergency requirements. Innovative solutions to removing VOCs and purifying indoor air are required, as well as lighting designs that are sympathetic to an occupant’s circadian rhythm during daytime hours. The following WELL standards are encouraged to be followed where possible:

- Enhanced Air Ventilation, Feature A06, Parts 1-4
- For Naturally Ventilated Spaces: Operable Windows, Feature A07, Parts 1-3; For Mixed-Mode Ventilated Spaces: Operable Windows, Feature A07, Parts 1-3 and Air Filtration, Feature A12; For Mechanically Ventilated Spaces: Air Filtration, Feature A12
- Combustion Minimization, Feature A10
- Visual Lighting Design, Feature L02
- Circadian Lighting Design, Feature L03
- Thermal Zoning, Feature T03
- For Radiant Systems: Radiant Thermal Comfort, Feature T05

The WELL Building Standard v2.0 - details and requirements for each Feature can be found in the Standard, which can be accessed for free at https://v2.wellcertified.com/v/en/concepts (see appendix for more about these features)

Costs and Innovative Technologies

For all the innovative solutions the teams come up with incremental costs must be applied (if the team thinks the measure will save money in construction costs please also include this). Overall payback will be calculated and presented. The teams are allowed two free passes, i.e. the teams can include two new and innovative technologies and do not have to include costs for these, things such as algae walls, electricity producing walkways and so on. The teams need to justify why they are including these technologies and how they add to the requirements of the building. These technologies cannot include PV, solar thermal or conventional energy storage systems (e.g. batteries).
Appendix

Building Envelope

Feature 56: Solar Glare Control: Though bright light during the day is conducive to good health, uneven levels of brightness in the visual field can cause visual fatigue and discomfort. Glare, or excessive brightness, is caused by light scattering within the eye, thereby creating a "veil" of luminance that reduces the luminance contrast as received by the retina. In buildings, sources of glare are often unshielded or poorly shielded light, or sunlight directly hitting the eye or reflective surfaces. Projects must demonstrate compliance with Parts 1 and 2, where applicable, for this Feature.

Feature 62: Daylight Modeling: Exposure to appropriate amounts of natural light reinforces the alignment of circadian rhythms and reduces dependence on electricity for artificial lighting; however, excessive sunlight can cause glare and unwanted visual contrast. Projects must demonstrate compliance with Part 1 for this Feature.

Feature 63: Daylighting Fenestration: Exposure to natural light can improve mood, alertness, and overall health. Ideal lighting involves proper exposure to diffuse daylight, as well as careful design of windows and glazing to avoid excessive glare and heat gain. Windows are the key variable for both ensuring that occupants receive enough light for positive physiological and subjective effects, but also not too much light that causes discomfort or becomes a source of distraction. Balancing energy performance, thermal comfort, and access to quality daylight are essential to proper building design. Projects must demonstrate compliance with Parts 1 through 3 for this Feature.

Lighting Systems

Feature 54: Circadian Lighting: Light is one of the main drivers of the circadian system, which starts in the brain and regulates physiological rhythms throughout the body's tissues and organs, affecting hormone levels and the sleep-wake cycle. Circadian rhythms are kept in sync by various cues, including light which the body responds to in a way facilitated by intrinsically photosensitive retinal ganglion cells (ipRGCs): the eye's non-image-forming photoreceptors. Through ipRGCs, light of high frequency and intensity promote alertness, while the lack of this stimulus signals the body to reduce energy expenditure and prepare for rest. The biological effects of light on humans can be measured in Equivalent Melanopic Lux (EML), a proposed alternate metric that is weighted to the ipRGCs instead of the cones, which is the case with traditional lux. The best source of the required EML is the sun, though the same required frequency and intensity can also be achieved using LED light fixtures. Projects must demonstrate compliance with Parts 1 through 4, where applicable, for this Feature.

Air Systems

Feature 3: Ventilation Effectiveness: Routine indoor activities including cooking, cleaning, building operations and maintenance and even the presence of occupants themselves can degrade air quality. Many indoor pollutants resulting from such activities, including particulate matter and VOCs can cause discomfort and trigger asthma and eye, nose and throat irritation. Because it is difficult to test for every potential pollutant, and because carbon dioxide is easy to detect, carbon dioxide levels serve as a proxy for other indoor pollutants. Projects must demonstrate compliance with Parts 1 and 2 for this Feature.

Feature 21: Displacement Ventilation: By strategically designing the height of air ventilation, displacement ventilation can enhance air change effectiveness. Displacement ventilation supplies air at very low velocity levels at or near the floor level, which then rises to the ceiling level. Since heat in a room is naturally stratified, displacement ventilation not only ensures that air is not delivered and pushed through the return air path (often the dirtiest portion of the air stream), but also tends to concentrate pollutants near the ceiling. Once there, the pollutants are out of the breathing zone and can be more easily removed. Projects must demonstrate compliance with Parts 1 and 2 for this Feature.

Feature 23: Advanced Air Purification: Some circumstances justify greater investment in air purification strategies. For example, proximity to highly traveled roads, manufacturing plants and seasonal variation
can affect outdoor air quality, increasing ozone and VOC content, and in turn diminishing indoor air quality. Similarly, climates with high humidity levels and inadequate indoor ventilation can foster the development of mold and spores in indoor environments. Project teams are encouraged to research passive ways of adding air purification to the building without adding additional energy demand for a building with the goal of implementing net-zero energy. Projects must demonstrate compliance with Part 2 for this Feature, or apply an Alternative Adherence Path (AAP) for how to control ozone and VOC levels within the building.

**Thermal Comfort**

**Feature 76: Thermal Comfort:** Thermal comfort in the body is provided through homeothermy, the balancing of heat gains and losses to maintain the body's core temperature within its narrow range, 36-38 °C [97-100 °F], and regulated by the hypothalamus. Thermal comfort can affect mood, performance and productivity. However, temperature preferences are highly personal and differ from one individual to another. Balancing the energy requirements of large buildings with the varied occupant preferences can thus be challenging. Projects must demonstrate compliance with Parts 1 or 2, as appropriate, for this Feature.

**Feature 82: Individual Thermal Control:** Thermal comfort preferences are highly individual, and can be affected by metabolism, body type, and clothing. These factors make it nearly impossible to find a temperature that will satisfy all occupants in the same space at the same time. Providing areas with different thermal gradients, as well as individual thermal comfort devices, can ensure that building occupants can choose areas with temperatures that best fit their thermal preferences (termed "free address"). Projects must demonstrate compliance with Part 1 for this Feature.