REQUEST FOR CITY COUNCIL ACTION

MEETING DATE: NOVEMBER 10, 2020

TITLE: REVIEW RECOMMENDATIONS OF THE STRATEGIC ENERGY PLAN

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RECOMMENDED ACTIONS

Discuss and provide direction.

EXECUTIVE SUMMARY

In September 2018, recognizing the connection between Irvine's energy consumption and emissions, the City Council commissioned the development of the Strategic Energy Plan (Energy Plan) to prepare for a resilient energy future in Irvine. The purpose of this plan is to propose sustainable, economically feasible, and actionable recommendations for the City to better manage its operations, and recommend effective measures the Irvine community can implement to reduce its energy consumption and emissions as well.

The measures put forth in the Energy Plan address the main sources of the City's energy consumption and emissions, and cover three key sectors that will assist Irvine in meeting statewide emission reduction targets: Energy Supply, Buildings, and Transportation and Land Use. The City is already taking action on some of the recommendations including: joining/forming a Community Choice Energy entity, developing a community-facing energy upgrade program, and developing a comprehensive Electric Vehicle (EV) action plan, and work is continuing in these areas.

To put the City on a path to secure cost savings in City operations, and meet State targets requiring reductions in emissions, staff seeks City Council direction to issue requests for:

1. Portfolio-wide energy procurement for City facilities, including a review of building electrification potential and electrical capacity needs, and
2. Development of a plan to transition the City's fleet to electric vehicles by 2035.

These recommendations will work together as the assessment of the City's energy needs and electrification potential will include information on updating the electrical capacity at each location to meet future EV charging demands in Irvine.

The Energy Plan finds that there may be funding options available to offset the costs of these recommendations, including grants and Public-Private-Partnerships, which are discussed further in the staff report. There is currently $75,000 budgeted to assist with planning and implementation of these recommendations. Staff can pursue these opportunities to determine what funding sources are available to reduce fiscal burdens moving forward.

The nine recommendations and 21 action items presented in the Energy Plan are listed in Attachment 1, and briefly discussed in this staff report. Attachment 2 highlights the feasibility of microgrid technology in Irvine, which is reviewed in further detail in the Strategic Energy Plan (Attachment 3). The Next Steps section at the end of the staff report summarizes the staff recommendations for City Council consideration.

COMMISSION/BOARD/COMMITTEE RECOMMENDATION

On September 12, 2017, the City Council approved the Work Plan submitted by the Green Ribbon Environmental Committee (Committee), which included a task to update the City's energy plan. Staff reviewed the City's existing energy programs to determine what initiatives should be included in the request for proposals. At its meeting on August 27, 2018, the Committee reviewed the proposal submitted by the Integral Group and recommended that the City Council award the contract. At its joint meeting on September 25, 2018, the City Council awarded a professional services contract to the Integral Group to develop the Strategic Energy Plan, and directed staff to provide quarterly updates on the progress of the project to the Committee.

During the course of this project, Committee members have participated in the stakeholder workshops to provide input, received quarterly updates on project status at its regular meetings, and reviewed the proposed recommendations of the Energy Plan at the Committee meetings on August 10 and November 9.

ANALYSIS

In November 2018, staff began working with a consultant team led by the Integral Group, and composed of representatives from UCI and the Energy Coalition, to update the City's previous energy planning efforts, and engage Irvine stakeholders in providing input on strategies that are a strong fit for Irvine. Irvine's future energy consumption and emissions are influenced by several factors, including: population growth, development growth, State policy, and utility emissions intensity. The Energy Plan evaluates the impacts statewide policy will have on both these areas in Irvine, evaluates the City's energy demands, and identifies feasible strategies that can reduce operational costs and energy consumption.

The Energy Plan also provides valuable data, including an energy use baseline and emissions inventory that will inform the City's climate planning efforts. In a related item, the City is in the process of updating its General Plan, with a focus on the Housing Element due to the state mandated deadline. The City Council directed the addition of an "Environmental

Protection and Climate Action" to the General Plan update. This new element will be independent from the climate plan, but will link the General Plan to the climate plan at a high-level while incorporating findings of the Strategic Energy Plan.
The State of California has set ambitious targets to reduce greenhouse gas (GHG) emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. According to the California Air Resources Board, local governments have a role to play in helping the State achieve its climate goals, and are encouraged to adopt goals to reduce GHG emissions in line with State targets.

Currently, meeting the State's emissions reduction target is voluntary, and to do so the City would need to implement measures to reduce overall emissions 24.3 percent by 2050, compared to Irvine's 2006 baseline. A series of statewide regulations will significantly increase clean energy consumed and produced in California, and will improve energy efficiency to address the State's climate goals. These statewide actions will improve emissions reductions in Irvine; however, Irvine's energy use and emissions are expected to increase until 2025 due to growth and development.

The Energy Plan shows that through a combination of statewide policies and implementing the recommended actions in the Energy Plan, Irvine can exceed the State's 40 percent emissions reduction target for 2030, and come close to meeting the 2050 target. While the recommendations presented in the Energy Plan are projected to reduce emissions just shy of the recommended target, newly issued State mandates in 2020 will lead to further reductions in emissions, enabling Irvine to meet the projected State targets.

To formulate the recommendations proposed in the Energy Plan, the consultant team led meetings with a group of City staff and community stakeholders, including representatives from the business community, residents, students, and utilities. Input was provided to create the City's Energy Vision to demonstrate: "…commitment to leadership and innovation, supporting businesses and residents in adopting affordable, efficient, and resilient energy solution." The guiding principles of innovation, resilience, and practicality were selected as criteria to consider during the formation of the recommended strategies. Stakeholder feedback was also reflected in the co-benefits identified for each strategy. More detailed information on the project approach is included in Appendix C of the Energy Plan (Attachment 3).

This staff report provides a brief overview of the measures presented in the Strategic Energy Plan that will help Irvine reduce energy consumption and emissions, and concludes with next steps for the City Council's consideration.

Recommendations of the Strategic Energy Plan

In addition to summarizing the recommendations in the Energy Plan, this section highlights any ongoing project status, and the funding opportunities available. Attachment 1 provides more analysis of each recommendation, and Attachment 2 summarizes the potential for microgrid technology in Irvine. The Energy Plan provides several examples of how other

communities are utilizing the microgrid concept to provide backup power for critical locations during power outages, and in some cases even allow the participants to sell electricity generated back to the microgrid. As the study found, this process is enabled by the local utility allowing for transfer of electricity across the utility distribution system, which is not currently allowed across SCE infrastructure. Staff will continue to monitor this concept, and any funding opportunities that arise to assist with planning efforts.

The nine proposed recommendations detailed in the Energy Plan are presented in the following sectors: Energy Supply, Buildings, and Transportation and Land Use.

Energy Supply Recommendations

SB-100 requires California's Renewable Portfolio Standard to reach 100 percent renewable by 2045, so all electricity purchased by Southern California Edison (SCE), or any provider, will be carbon neutral by that date. This is important as the majority of Irvine's energy supply is purchased from the utilities, with some locally generated solar, so State and utility actions will continue to influence Irvine's energy supply.

The two recommendations in the Energy Supply section of the Energy Plan are focused on changes to the type of energy consumed in Irvine and the source of energy. The Energy Plan notes that there are steps the City can take to influence a transition to procurement of renewable energy. Implementing the energy supply actions below will reduce emissions in Irvine by 7.8 percent.

Recommended Actions
ES-1: Join a Community Choice Energy (CCE) Electricity Supplier
ES-2: Portfolio-wide Procurement for City Facilities

These are high-priority recommendations for the City as some progress is currently underway. Further details are available in Attachment 3. In summary:

- Item ES-1 is being developed as the City is working with other Orange County cities to form a Joint Powers Authority and prepare for launch of a CCE in 2022. The funds expended can be reimbursed once the CCE is running and generates revenue. The Energy Plan recommends that once a CCE is formed, opting customers in at the zero-carbon electricity level will directly help Irvine meet statewide emissions targets. Staff recommends the consideration of options to exceed the default levels of the state's Renewable Portfolio Standard requirements.
- Item ES-2 recommends conducting a competitive energy procurement for solar, storage, and energy efficiency across the City's portfolio of facilities. The Energy Plan suggests that the City should leverage market competition, and utilize power purchase agreements to minimize capital expenses. Staff recommends moving forward with this recommendation to reduce operating expenses and future energy costs. This can be done in combination with the building decarbonization assessment noted below.

Buildings Recommendations

The recommendations in this section deal with promoting resources to reduce energy consumption in buildings; adopting measures to encourage energy storage, electric vehicles, and building electrification in Irvine; and decarbonizing City facilities.

The buildings sector in Irvine represents the largest component of both energy and emissions: 74 percent of energy consumed in Irvine communitywide in 2018 was used to operate buildings. The Energy Plan finds that emissions are split somewhat evenly among residential, commercial, and industrial sectors. The biggest opportunity to reduce energy use and emissions will likely come from upgrading existing buildings, and ensuring future development is efficient and powered by renewable energy. The Energy Plan states that as California's electricity supply gets cleaner, shifting buildings away from natural gas use is becoming a key part of many cities' climate strategy. The Energy Plan further reports that building electrification could support between 64,000–104,000 jobs annually in California.

While State policy is pushing future building codes to require net zero energy buildings, until that time, even highly efficient new buildings will increase the overall emissions and energy use in Irvine. To address greenhouse gas emissions, and reduce energy consumption, the consultant recommends that the City should implement the following actions to reduce emissions by 12.5 percent.

Recommended Actions
B-1: Develop a Community-Facing Energy Upgrade Program
B-2: Reduce or Remove Administrative Obstacles to Energy Storage, Electric Vehicles, and Building Electrification
B-3: Decarbonize City Facilities
B-4: Develop Decarbonization Roadmap

Details on each of the recommendations are included in Attachment 3. In summary:

- Item B-1 is a low-cost and feasible outreach effort to connect residents and businesses with existing resources that can reduce energy consumption and costs. This recommendation can be implemented with staff resources.
- Item B-2 recommends engaging with developers, equipment installers, and other stakeholders to identify obstacles and prioritize solutions that are feasible in Irvine. The City currently offers streamlined permitting for battery storage, EV charging stations, and solar applications. Overall, these voluntary actions are feasible with costs expected to be low, and provide an opportunity for City leadership in this area.
- Item B-3 recommends pursuing building decarbonization by piloting all-electric construction for a new City facility, and retrofitting an existing site. These are not identified as high-priority at this time. However, identifying potential locations can be incorporated into the portfolio-wide Energy Supply recommendation above.

- Item B-4 recommends the City collaborate with the Building Decarbonization Coalition to monitor regulatory impacts, identify funding opportunities, and learn best practices from other California communities related to restricting natural gas use in buildings. This can be completed with existing staff resources.

Transportation and Land Use Recommendations

Between 2020 and 2050, Irvine's population is expected to grow by approximately 50,000 people. Higher population will result in more energy use in buildings, but will also result in additional vehicles on the roads, contributing to more emissions from the transportation sector. As of 2018, transportation in Irvine comprised 26 percent of community-wide energy consumption and generated 33 percent of GHG emissions. Attachment 3 provides a breakdown of the energy consumption versus the emissions for each sector.

While California's Low Carbon Fuel standard is projected to reduce GHG emissions in Irvine by 10 percent by 2050, the City and residents can take action to address energy consumption by reducing vehicle miles traveled (VMT) and emissions by shifting to cleaner fuels and zero emissions vehicles. Implementing the actions recommended in this Transportation section is estimated to reduce emissions by 1.2 percent.

Recommended Actions
TLU–1: Reduce emissions from City Fleet Vehicles and Employee Commute
TLU–2: Incentivize Sustainable Transportation Modes for Residents and Businesses
TLU–3: Develop a Comprehensive Electric Vehicle Action Plan

The City is taking some actions in several of the recommended areas. Details on each action are summarized in Attachment 3. In summary:

- Item TLU-1 recommends developing a plan to transition all City-owned light-duty fleet vehicles to zero-emission vehicles. This will prepare the City to meet the Governor's mandated requirement of EV purchases by 2035. Grant funds are available to offset the cost of EVs, and grants may be available assist with planning costs. The recommendation also addresses emissions from employee commute and recommends a telecommuting policy for employees, which the City is considering.
- Item TLU-2 encourages the City to advocate OCTA to incorporate zero-emission vehicles in its public transit service, and continue to promote best practices for sustainable modes of transportation. This item also supports implementing the recommendations of the Strategic Active Transportation Plan, which the City is currently working on.
- Item TLU-3 provides suggestions for goals to include in the EV Action Plan that the Orange County Great Park Board directed staff to develop. These goals align with the Strategic Energy Plan and will identify how the City can meet the needs for EV charging in Irvine.

Next Steps

As the Energy Plan finds: “Governor Newsom's direction to review the state’s current climate strategies and accelerate all of them in recognition of the climate reality we are experiencing, will likely lead to new statewide mandates to reduce energy consumption and GHG emissions.”

The City Council can prepare Irvine to respond to the directives associated with the climate emergency by implementing several of the measures identified in the Strategic Energy Plan. These measures can be phased in according to the City’s priorities, and availability of staff resources and funding opportunities. As noted above and in the Funding section of the Energy Plan, several of the planning and collaborative actions can begin without the need allocate City funds at this stage. Ongoing work is currently taking place for several items that the City Council should consider when those items are brought forward (e.g. ES-1, TLU-2, and TLU-3). Staff recommends the following next steps to implement the strategies listed in the Energy Plan:

1. To minimize capital expenses and reduce future energy costs, issue a request for a comprehensive portfolio-wide procurement of energy projects at City facilities that include an assessment of building decarbonization potential, and electricity capacity needs to meet future EV charging demands.
2. Identify grant funding, and issue a request for services to assist with plans to transition the City’s fleet to electric vehicles to meet the State’s mandate by 2035.

Staff seeks City Council direction to pursue grant opportunities and issue requests for these initiatives, as well as direction to continue collaborative work with staff resources on the other areas recommended in the Energy Plan.

ENVIRONMENTAL REVIEW

N/A

ALTERNATIVES CONSIDERED

The City Council could decide to move forward with a selection of the recommendations, or postpone implementation of the Energy Plan recommendations at this time.

FINANCIAL IMPACT

The Public Works and Transportation Department currently has $75,000 budgeted to assist with implementation of the Energy Plan recommendations. Staff can pursue grant opportunities, rebates and incentives, and Public-Private-Partnerships to determine what funding sources are available to reduce fiscal burdens moving forward.

REPORT PREPARED BY: Sona Coffee, Environmental Programs Administrator

ATTACHMENTS

1. Recommendations of the Strategic Energy Plan
2. Microgrid Potential in Irvine
3. Strategic Energy Plan

Recommendations of the Strategic Energy Plan: At-a-Glance

Recommendations	Actions
Energy Supply	
ES–1: Join a Community Choice Energy (CCE) Electricity Supplier	1. The City of Irvine should form or join a CCE entity. 2. The City should opt all customers into a zero-carbon electricity product by default.
ES–2: Portfolio-wide Procurement for City Facilities	1. The City should conduct a competitive energy procurement for solar, storage, and efficiency across the City's portfolio.
Buildings	
B–1: Develop a Community-Facing Energy Upgrade Program	1. Identify underserved sectors of existing energy upgrade programs. 2. Develop community outreach programs targeted to underserved sectors that help connect them to existing programs and resources.
B–2: Reduce or Remove Administrative Obstacles to Energy Storage, Electric Vehicles, and Building Electrification	1. The City should continue to offer a streamlined application process and links to financing resources on the City's website. 2. Instead of incentivizing solar PV or other mature technologies, the City should consider administrative mechanisms to encourage energy storage and building electrification, such as fast tracked or discounted permitting. 3. The City should identify obstacles in existing City codes and requirements and propose revisions to mitigate them.
B–3: Decarbonize City Facilities	1. Identify and pilot an all-electric new construction project. Document costs and challenges and evaluate using all-electric as basis of design for future City buildings. 2. Conduct a feasibility study of existing City buildings to identify candidates for electrification. 3. Pilot a retrofit of a City building to convert to all-electric operations.
B–4: Develop Decarbonization Roadmap	1. Participate in the Building Decarbonization Coalition to monitor regulatory impacts, identify funding opportunities, and learn best practices from other California communities related to building decarbonization.

ATTACHMENT 1

Recommendations of the Strategic Energy Plan: At-a-Glance

	2. Identify ways to incentivize and encourage private sector shift away from natural gas infrastructure.
Transportation and Land Use	
TLU–1: Reduce emissions from City Fleet Vehicles and Employee Commute	1. By 2022, establish a plan to transition all City-owned light-duty fleet vehicles to be zero emission vehicles by 2032. 2. By 2030, ensure that over 50% of the City's fleet uses alternative fuels, with 100% of all non-emergency response sedan purchases being zero emission vehicles. 3. Continue to support sustainable transportation options for employee commuting. 4. Establish a telecommuting policy that reduces the overall need for employee commute transportation.
TLU–2: Incentivize Sustainable Transportation Modes for Residents and Businesses	1. Advocate for increased public transportation service and a transition to zero-emission vehicles from OCTA. 2. Implement recommendations of the Irvine Strategic Active Transportation Plan. 3. Recognize and promote best practices from local business leaders for sustainable transportation modes.
TLU–3: Develop a Comprehensive Electric Vehicle Action Plan	1. Develop a Comprehensive EV Action Plan that: • Establishes the current baseline for EV adoption and projects future scenarios across vehicle types. • Creates an infrastructure plan for public and private electric vehicle supply equipment (EVSE) needs citywide. • Identifies policies and incentives to encourage EV adoption, such as parking policies and prices, streamlined permitting, fleet requirements, and zoning policies. • Identifies partnerships to accelerate EV adoption with public and private agencies, such as vehicle manufacturers, ride hailing companies, fleet owners and operators, local government coalitions, and utilities. • Considers impacts to equity and access, particularly for low-income communities, renters, and other Irvine residents and businesses with lower access to EVs.

Recommendations of the Strategic Energy Plan: At-a-Glance

ENERGY SUPPLY

Number	Action	Co-Benefits
ES-1	Join a CCE Electricity Supplier	
ES-2	Portfolio-wide Procurement for City Facilities	

BUILDINGS

Number	Action	Co-Benefits
B-1	Develop a Community-Facing Energy Upgrade Program	
B-2	Reduce or Remove Administrative Obstacles to Energy Storage, Electric Vehicles, and Building Electrification	
B-3	Decarbonize City Facilities	
B-4	Develop Decarbonization Roadmap	

TRANSPORTATION AND LAND USE

Number	Action	Co-Benefits
TLU-1	Reduce emissions from City Fleet Vehicles and Employee Commute	
TLU-2	Incentivize Sustainable Transportation Modes for Residents and Businesses	
TLU-3	Develop a Comprehensive Electric Vehicle Action Plan	


Resiliency & Climate Preparedness


Cost Savings


Health, Wellbeing, & Livability


Support Local Economy


Reduce Traffic & Congestion


Community Priority

Microgrid Potential in Irvine

Microgrids, generally described as a combination of energy generation and energy storage that can be controlled to supplement or replace energy from the utility, provide the potential for several benefits in Irvine: Energy Cost Savings, Emissions Reductions, and Resilience. Of particular interest in this update to the City's energy planning efforts was the review of the microgrid concept to see if application in Irvine is feasible. The consultant team found that while there has been an expansion of solar, and advancement in battery technology, utility regulations impact the widespread use of microgrids across multiple properties. The Energy Plan does highlight microgrid applications at city-owned facilities, and these findings could be applied to privately-owned facilities that seek to achieve the benefits listed above.

While microgrids can use several sources of energy, the consultant found that the most economically viable source of energy for the City's facilities is solar energy, and that lithium-ion battery technology is the dominant technology in the market today. According to the consultant, Irvine residents and business face fewer and shorter electric service disruptions than the typical Southern California Edison (SCE) customer. Further, the consultant states that while the threat of more frequent Power Safety Power Shutoff (PSPS) events exist, this is not a core risk in Irvine. However, after the extended power outage in Irvine in 2019, and the several outage warnings during the extreme heat events in 2020, staff recommends considering the options available to plan for resiliency in the case of future outage events as extreme heat and wildfire events are expected to increase in the future.

The Energy Plan includes a recommendation for assessing the feasibility of adding solar and storage to City facilities. Seven of the City's community centers currently have solar panels. There is potential to expand and combine this energy source with battery storage to provide for the control of the energy used on-site, avoid peak electricity costs, and provide backup power in the case of emergencies. The City is currently planning for a pilot battery storage project at the Woollett Aquatic Center to offset peak power usage on-site, and will assess the application of this technology. Battery storage technology has been successfully utilized in the community, with the Irvine Company's roll-out of 24 hybrid-electric buildings that use batteries to reduce peak power by 25 percent. According to the Irvine Company, the hybrid-electric buildings in its portfolio can reduce power demand by 13 megawatts, enough power to serve 13,000 homes during peak hours.

The Microgrid section of the Strategic Energy Plan provides several examples of how other communities are utilizing the microgrid concept to provide backup power for critical locations during power outages, and in some cases even allow the participants to sell the electricity generated back to the microgrid. As the study found, this process is enabled by the local utility allowing for transfer of electricity across the utility distribution system, which is not currently allowed across SCE infrastructure. Staff will continue to monitor this concept, and any funding opportunities that arise to assist with planning efforts.

ATTACHMENT 2