CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Christopher Burton

SUBJECT: **See Below**

DATE: March 21, 2025

Approved

Date: 3/28/25

COUNCIL DISTRICT: 3

SUBJECT: San José Innovative Project Pathway Program Early Consideration Review for a Project Located at 300 South 1st Street

RECOMMENDATION

Accept the report and provide direction for the early consideration of projects as part of the San José Innovative Project Pathway Program process for a project located at 300 South 1st Street.

SUMMARY AND OUTCOME

Staff requests that the City Council review and provide feedback and direction on the San José Innovative Project Pathway Program (Pathway Program) project application to provide early consideration of the proposed development project and ensure that the project provides meaningful advancement in areas such as the City's fiscal health, job creation potential, housing production, and sustainability as outlined in Council's Pathway Project Memorandum dated November 5, 2024.

Projects being considered through the Pathway Program are generally inconsistent with the General Plan text, Zoning Code allowed uses, or development standards or regulations. The program provides the City Council with the opportunity to provide clear and timely direction to staff on whether to further proceed with processing the application. Should the City Council direct staff to continue processing the proposed project, staff will identify the most expeditious path to advance the project and include any consideration or conditions as directed by the City Council as part of any subsequent approval.

BACKGROUND

On November 5, 2024, the City Council adopted a recommendation from the Rules and Open Government Committee to create the Pathway Program to streamline the approval of development projects that provide an extraordinary benefit to the City of San José (Attachment A - November 5, 2024 City Council Memorandum). As part of the program, the staff has accepted applications for proposed data center uses located in the Downtown Growth Area.

In January 2025, Project Valley Title LLC (Westbank) resubmitted their Site Development Application (File No. H24-051) with the inclusion of a 10-level data center (eight levels above grade, approximately 269,553 square feet, and two levels below grade, approximately 67,246 square feet) in addition to their proposal for a mixed-use development comprising of three 30-story high rise buildings with 1,147 residential units, approximately 8,741 square feet of residential amenities, and 18,442 square feet of ground floor retail space.

There is already an existing entitlement (File No. H21-012) that allows the demolition of an existing 3-story, 58,362-square foot office building, the removal of one ordinance-sized tree and one non-ordinance-sized tree, and the construction of a 20-story building with two towers totaling approximately 1.99 million square feet, including 60,430 gross square feet of ground floor retail/community service space and 1,319,340 gross square feet of commercial office space with five levels of underground parking on a 2.84-gross acre site and the new application would allow them to retain this entitlement in addition to the new revisions.

ANALYSIS

Inconsistency with City Policies and Ordinances

Data center uses do not fit within any of the use categories contemplated for the Downtown land use designation and is not likely to contribute to a more vibrant urban environment contemplated in the General Plan. While the available information on how many jobs are created through the addition of new data centers is not readily available, reports from industry groups and real estate firms suggest that employment density is considerably lower than other commercial uses. On-site employment is often related to maintenance of building and network systems, as many of the functions occurring in the building can be monitored and supported remotely. This obviously changes from location to location and between user-specific locations versus co-location facilities. In addition, the use of these facilities continues to evolve as centers in high-cost locations (such as San José and the broader Silicon Valley) continue to be prioritized for their additional processing and computing power related to proximate research and development uses rather than traditional data warehousing. In this configuration, data

centers are becoming part of the supporting infrastructure of emerging technologies in the innovation economy. Various research reports suggest that staffing estimates for these centers could be between 10-50 employees.

Data centers represent an economic development opportunity based on increased revenues for the City. The nature of the construction and the equipment of the center can result in higher levels of property and utility tax for the City. As noted in the recent San José Municipal Electric Utility Exploration memorandum dated March 12, 2025 that was issued for the City Council Special Meeting on March 21, 2025:

> "*As an example, a new 99-megawatt data center fully ramped up and running would provide an estimated $3.5 to $6.4 million annually in new property tax and utility user tax and require few, if any, additional City services."*

While this may represent a more fiscally positive land use than other office-related employment uses, it doesn't have the same indirect economic impact increased employment has on local revenue and sales tax.

Low-density employment uses are inconsistent with the Downtown and Downtown Commercial General Plan Land Use Designations, which are intended to include office, retail, service, residential, and entertainment uses in the Downtown but which also specifically state that redevelopment within this designation should be at very high intensities unless incompatibility with other major policies within the Envision General Plan (such as Historic Preservation Policies).

In addition to inconsistencies with the land use designation, data centers do not align with the General Plan and Downtown Strategy 2040's goals for a mixed-use environment that supports pedestrian activity and transit use. The vision for new development in Downtown is to encourage a stronger mix of uses, including evening and late-night activities, to help create a 24-hour city center that generates jobs, supports local revenues, and attracts visitors and workers to San José. This vision also seeks to recognize Downtown as a key urban area, maximizing development potential and density and promoting design and scale that contribute to its role as a major urban center.

The General Plan provides flexibility for mixing uses throughout Downtown. It encourages compact, dense forms of employment, entertainment, cultural, public/quasi-public, and residential uses that promote social interaction, serve as a focal point for the community, and support the broader goals of the Envision General Plan.

Project Alignment with Other City Goals

As part of the Valley Title data center proposal, the applicant included a narrative and an exhibit on how the project may meet the fiscal health, job creation, and sustainability criteria listed in the Pathway Program memorandum (Attachment B – Valley Title Project Narrative and Attachment C – Creative Energy Exhibit).

The project proposes a concept of District Energy Overlay in the downtown areas, where they would build both housing and data centers at the same time and integrate a system in which they can more efficiently utilize, capture, and reuse the energy. Typically, data centers use a lot of electricity to run, and often, the byproduct is heat. The goal is to use the heat generated from the data center, capture and reuse this energy for the adjacent residential building, and essentially reuse the electricity twice.

The applicant proposes that data centers provide extraordinary economic benefits as they are “essential infrastructure, they bring significant tax revenue, spur technological innovation” by increasing the tax base. Data centers attract high-tech industries and investment to boost local economies further. Additionally, this application includes concurrent development of hundreds of new constructed residential units.

EVALUATION AND FOLLOW-UP

If the City Council directs staff to continue processing the proposed project, staff will continue to review the project to advance the City’s goals and, as needed, make amendments to the General Plan, zoning code, development standards, and/or regulations. Once that is complete, staff will bring forth the project to City Council for consideration.

COORDINATION

The preparation of this memorandum has been coordinated with the City Attorney’s Office.

PUBLIC OUTREACH

This memorandum will be posted on the City’s Council Agenda website for the April 8, 2025 City Council meeting.

COMMISSION RECOMMENDATION AND INPUT

No commission recommendation or input is associated with this action.

CEQA

Not a Project, File No. PP17-007, Preliminary direction to staff and eventual action requires approval from the decision-making body.

PUBLIC SUBSIDY REPORTING

This item does not include a public subsidy as defined in section 53083 or 53083.1 of the California Government Code or the City's Open Government Resolution.

/s/
CHRIS BURTON
Director of Planning, Building and Code Enforcement

For questions, please contact John Tu, Division Manager, at john.tu@sanjoseca.gov or 408-535-6818.

ATTACHMENTS

A. November 5, 2024 City Council Memorandum
B. Valley Title Project Narrative
C. Creative Energy Exhibit

COUNCIL AGENDA : 11/5/2024
FILE : 24-2191
ITEM : 8.4

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Toni J. Taber, CMC
City Clerk

SUBJECT: **SEE BELOW**

DATE: November 5, 2024

SUBJECT: San José Innovative Project Pathway Program

Recommendation

As recommended by the Rules and Open Government Committee on October 30, 2024, create the San José Innovative Project Pathway Program (Pathway Program) to streamline the approval of development projects that provide an extraordinary benefit to the City of San José. The Pathway Program will provide a clear policy route for securing approval of innovative investment projects. The Pathway Program will:
(a) Accept project applications that meaningfully advance city goals and require amendments to general plan text, zoning code allowed uses, or development standards or regulations.
(b) Establish objective criteria for evaluating Pathway Program applications, ensuring alignment with city goals such as the city's fiscal health, job creation potential, housing production, and sustainability.
(c) Delineate a clear submission process and minimum criteria for applicants, including required documentation and fees.
(d) Restrict the initial geographical scope of this new program to the boundaries of the Downtown Growth Area.
(e) Establish an early consideration review process at City Council for Pathway Program applications that meet pre-established criteria, enabling the Council to provide clear, timely direction to staff on whether to proceed with processing the application further.
CEQA: Not a Project, File No. PP17-008, General Procedure and Policy Making resulting in no changes to the physical environment. (Mayor, Davis & Foley)
[Rules Committee referral 10/30/2024 - Item C.1]

RULES COMMITTEE: 10/30/2024
ITEM: C.1

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: RULES AND OPEN GOVERNMENT COMMITTEE

FROM: Mayor Matt Mahan
Councilmember Dev Davis
Councilmember Pam Foley

SUBJECT: San Jose Innovative Project Pathway Program

DATE: 10/24/2024

APPROVED: Date:

10/24/2024

RECOMMENDATION

1. Create the San Jose Innovative Project Pathway Program (Pathway Program) to streamline the approval of development projects that provide an extraordinary benefit to the City of San Jose. The Pathway Program will provide a clear policy route for securing approval of innovative investment projects. The Pathway Program will:

    a. Accept project applications that meaningfully advance city goals and require amendments to general plan text, zoning code allowed uses, or development standards or regulations.
    b. Establish objective criteria for evaluating Pathway Program applications, ensuring alignment with city goals such as the city's fiscal health, job creation potential, housing production, and sustainability.
    c. Delineate a clear submission process and minimum criteria for applicants, including required documentation and fees.
    d. Restrict the initial geographical scope of this new program to the boundaries of the Downtown Growth Area.
    e. Establish an early consideration review process at City Council for Pathway Program applications that meet pre-established criteria, enabling the Council to provide clear, timely direction to staff on whether to proceed with processing the application further.

ANALYSIS

San Jose, at the heart of Silicon Valley, thrives on innovation. Yet, visionary developers often face barriers — not from a lack of ideas, but from the absence of a clear policy allowing their projects to seek approval. If a project promises exceptional benefits to the city but faces obstacles in moving forward, San Jose should actively step in to clear the path and ensure its success. Innovation is in our DNA, and land use governance must reflect that by offering a more accessible, flexible, and dynamic approach.

This past year, San Jose faced a significant budget deficit over $50 million, which was closed under careful fiscal management. However, future budget outlooks appear difficult, with early estimates suggesting more challenges ahead. We should embrace efforts to boost economic growth and minimize fiscal burdens now. In fact, developers are poised to submit project proposals as soon as applications for this program opens. They recognize the opportunity to align their initiatives with our city's goals and contribute to San Jose's growth.

If a project fits certain minimum criteria, brings meaningful investment, moves us closer to meeting climate goals, or builds large quantities of new housing, let's find out how to make it work for everyone. We've taken positive steps approving the high-rise fee waiver program and downtown leasing incentives, attracting more investment interest into the heart of San Jose. But we cannot stop there. Let's empower builders to bring fresh ideas that bring real community benefits. To achieve this, we need a process that welcomes and supports those ideas from the start.

To ensure this new policy doesn't overburden staff, we should establish a checkpoint with the City Council to review and evaluate proposals and set a high standard for accessing the Pathway Program. This elevates only the most promising ideas and offers early feedback to applicants. The City Council should carefully assess the benefits of advancing certain projects by considering our limited resources alongside their potential to drive fiscal growth, sustainability, housing solutions, and job creation.

This process supports an economic strategy of becoming more market-responsive and adaptable. By enabling developers and businesses to propose policy changes, we encourage a more flexible approach to our city's growth.

PROJECT VALLEY TITLE LLC SUBMISSION

Sustainability

- Our project meaningfully advances the City's goals outlined in San José Envision 2040 promoting an innovative investment project of sustainable housing development and carbon net zero emission goals. See attached *District Energy Overlay Summary*.
- The vision for this project is to simultaneously build a data center and housing within the project. Typically, a data center uses electricity to run GPUs and simultaneously cool the building. That cooling takes place through a cooling tower with the heat dissipating into the air. Our project will run a similar process in turning electrons into thermal energy. Rather than wasting this thermal energy, waste heat, we will capture and reuse this energy in the
  adjacent residential building; *effectively using each electron twice*.
- As we are able to deliver multiple nodes of data center and housing, we pave the way for a future Community Energy System.
- Westbank is uniquely positioned to fulfill this ambitious goal due to our experience in highly complex development projects by pairing our in house design and construction expertise with our energy business, Creative Energy. We are uniquely qualified to bring all of the necessary pieces together. These pieces only come together when they are under one roof.
- The waste heat will be recaptured, and be passed on to the residents of the adjacent 1150 units in the form of low energy costs.

Fiscal Health

- Data centers provide extraordinary economic benefits, "As essential infrastructure, they bring significant tax revenue, spur technological innovation, and have a minimal impact on local traffic and services." *Essential Infrastructure: Data Centers power Economic Growth*; Data Center Dynamics
- The San José Innovative Project Pathway Program recognized that budgeting to meet the City's goals will be challenging in the years ahead. This billion-dollar Project will provide direct and indirect economic benefits through significant increase in the tax base, downtown vibrancy, a return through sales tax proceeds from new residents, and general valuation lift of all Downtown properties.

Job Creation

- "Through the "halo effect," [data centers] attract high-tech industries and investments, further boosting local economies. Data centers, much like roads, bridges, and power grids, are now integral to the modern economy. As cities and states recognize their value, data centers will continue to play an increasingly important role in driving sustainable, long-term economic growth." – *Essential Infrastructure: Data Centers power Economic Growth*; Data Center Dynamics

- In addition to the long term economic growth, the projects themselves will spur substantial construction job growth into the downtown economy.

Project	Jobs
Orchard	
- Data Center	2,535 Jobs
- Residential Tower	6,970 Jobs
Total:	**23,202 Jobs**
The jobs from above are estimates based on similar job creation studies prepared by a prominent financial services firm on similar projects.	

The Power of Being Bold

Innovation is in our DNA. While this project, as a standalone, hits many of the City's goals, it lays the foundation for San José to be home to a community energy system that aligns the AI economy with Downtown San José's future growth, net-zero housing and low-cost energy.

San José's Net Zero 2030 Goals commit the city to take bold action. Approximately one-third of the emissions from the City come from land use projects. Given that is essential that the City exploit the synergies between

As the first two nodes of the data center and housing come online, we intend to lay the infrastructure to connect these two innovative projects. Not only will we have one energy system capturing the energy from both data centers to enhance the capacity of the system all projects within the vicinity of this structure will be able to tap-in to this low-carbon, low-cost energy system. It will allow the projects to lower their construction costs by limiting the amount of on-site mechanical equipment needed and lower the operating costs of these projects through this recycled thermal energy system.

Our video outlining this concept can be found here.

District Energy Overlay Sumary

Contents:

Proposed Language for an Overlay: Only PD Zoning Requirement

District Energy Overlay

The District Energy Overlay is intended to facilitate the efficient generation and use of energy among multiple properties within an urban environment. The District Energy Overlay is applied to the Downtown Growth Area to capitalize on the dense urban nature of downtown to achieve environmental goals of green building practices and energy conservation. This Overlay provides the opportunity for Council-approved rezonings to set standards for Shared Energy projects within a single site and for multiple shared energy sites to be connected into a larger district energy system. The District Energy Overlay does not change the uses allowed within the Downtown Growth Area; sites in this Overlay may be rezoned to allow a mix of energy-intensive and complementary uses integrated with a heat capture system.

Each Shared Energy project will clearly address: the utilization of energy technology and high efficiency standards, allowed uses, a balanced ratio of housing or employment-based use to non-housing or employment use, concurrent construction requirements of different site uses, the incorporation of retail space, high quality architectural and urban design standards, the incorporation of privately-maintained public amenities, and other urban design actions necessary to successfully integrate energy-intensive uses to the surrounding urban character and contribute to a vibrant and active pedestrian realm. Uses within Shared Energy Projects will be built to either deliver or receive thermal energy to other uses within the project or the district, and each project: will include a minimum of 300 residential units onsite or on an adjacent property inclusive of properties separated by a public right of way; be dependent on heat recovery technology; incorporate public art into the buildings and/or each site; and have building facades that enhance and further a visually exciting urban downtown.

Proposed Language for an Overlay: With District Energy Plan Requirement

District Energy Overlay

The District Energy Overlay is intended to facilitate the efficient generation and use of energy among multiple properties within an urban environment. The District Energy Overlay is applied to the Downtown Growth Area to capitalize on the dense urban nature of downtown to achieve environmental goals of green building practices and energy conservation. This Overlay provides the opportunity for a Council-approved District Energy Plan to set standards for Shared Energy projects within a single site and for multiple shared energy sites to be connected into a larger district energy system.

The District Energy Overlay does not change the uses allowed within the Downtown Growth Area. Upon Council approval of a District Energy Plan, sites may be rezoned to allow a mix of energy-intensive and complementary uses, as specified in the District Energy Plan. Shared Energy projects within the District Energy Overlay will conform to and be entitled per land use and design standards established with an adopted District Energy Plan.

The District Energy Plan will clearly address: energy technology and efficiency standards, allowed uses, ratio or percentage of housing or employment-based use to non-housing or employment use, concurrent construction requirements of different site uses, the incorporation of retail space, architectural and urban design standards, privately-maintained public amenities, and other urban design actions necessary to successfully integrate energy-intensive uses to the surrounding urban character and contribute to a vibrant and active pedestrian realm. The District Energy Plan will explicitly require that all uses within Shared Energy Projects are built to either deliver or receive thermal energy to other uses within the project or the district, and that each project: include a minimum of 300 residential units onsite or on an adjacent property inclusive of properties separated by a public right of way; be dependent on heat recovery technology; incorporate public art into the buildings and/or each site; and have building facades that enhance and further a visually exciting urban downtown.

Overlay Text to Consider

The following language to be discussed with the City:
All projects must meet the Community Design Policies of the General Plan, Downtown Design Guidelines and any applicable historic district plan and design guidelines.

Draft General Plan Text Amendments

Overall, a substantial number of General Plan Goals, Policies, and Actions facilitate the development of on-site shared energy programs and district energy plans. As such energy infrastructure is arguably an emerging technology for cities, it is understandable that district energy is not called out by name in the General Plan or the Climate Action Plan for the City of

San José. The alternatives below identify locations in these two related plans that may be appropriate for insertion of reference to district energy.

1. **General Plan Chapter 3 Environmental Leadership**
   The General Plan chapter on Environmental Leadership includes existing language speaking to energy sustainability and progressive technologies and includes language on green buildings, energy conservation and renewable energy use, and infrastructure. Adding explicit language to this section regarding shared and district energy systems would be building on a foundation of existing policy support.

   1.a. Addition of a policy to Goal MS-1 - Building Green Policy Leadership (Ch 3, p3, pdf 123)
   Encourage the use of shared energy systems in mixed-use developments, particularly for energy-intensive uses.

   1.b. Modification of Policy MS-1.6 (Ch 3, p4, pdf 124)
   Recognize the interconnected nature of green building systems, and, in the implementation of Green Building Policies, facilitate and give priority to green building options that provide environmental benefit by reducing water and/or energy use and solid waste.

   1.c Addition of a policy to Goal MS-2 - Energy Conservation and Renewable Energy Use (Ch 3, p4, pdf 124)
   Explore opportunities for energy conservation through shared energy districts.

   1.c Modification of Action MS-2.8 Energy Conservation and Renewable Energy Use (Ch 3 p5 pdf 125)
   MS-2.8 Develop policies which promote energy reduction for energy-intensive industries. For facilities such as data centers, which have high energy demand and indirect greenhouse gas emissions, require evaluation of operational energy efficiency and inclusion of operational design measures as part of development review consistent with benchmarks such as those in EPA's EnergyStar Program for new data centers. Also require consideration of distributed power production for these facilities to reduce energy losses from electricity transmission over long distances and energy production methods such as waste-heat reclamation, on-site or within a shared energy district, or the purchase of renewable energy to reduce greenhouse gas emissions.

   1.d. Addition of an Action to Goal MS-2 - Energy Conservation and Renewable Energy Use (Ch 3 p5 pdf 125)
   Engage with private partners in the exploration of implementing emerging renewable energy technologies and energy conservation methodologies.

   1.e. Addition of an Action to Policies for Goal MS-14- Reduce Consumption and Increase Efficiency (Ch 3, p16, pdf 136)

Facilitate energy reduction and energy efficiency opportunities between properties through the use of shared energy districts, particularly for energy-intensive uses.

2. **Addition of a City Action in the Climate Smart San José Plan**
   The Climate Smart San José Plan is developed and reviewed in tandem with the General Plan and sets forth the environmental sustainability goals and actions for the City. Shared energy and district energy plans are aligned with many of the existing policies in the document and as the plan is explicit in identifying technologies and methodologies to encourage and incorporate in the City it is appropriate to incorporate language specific to shared energy systems/district energy.

   2.a. Addition of an 'Accelerate Development of ZNE Homes' City Action (Section 3.3, p 161)
   Encourage shared energy systems within mixed-use/ multi-family housing and across shared district energy systems.

3. **General Plan: Addition of an Action to Goal IN-1 - General Provision of Infrastructure**
   This section of the General Plan, within the Environmental Leadership chapter, speaks to the provision and maintenance of City infrastructure. The section gives general oversight provisions and speaks directly to water supply, wastewater, solid waste, and telecommunication but not does not speak explicitly to energy infrastructure. Most language is regarding public facilities but IN-1.9 speaks to private facilities as well. The existing Action-General Provision of Infrastructure speaks to infrastructure coordination, thus it may be appropriate to add an action.

   3.a. Addition of an Action to Goal IN-1 - General Provision of Infrastructure (Ch 3 p54 pdf 174)
   Consider how public infrastructure may facilitate the adoption of shared energy districts within the City.

4. **Addition of a Policy to General Plan Goal LU-3 - Downtown**
   The guiding policies of the General Plan Downtown Land Use speak to encouraging a balance of uses within the downtown to reinforce the area as a regional employment, entertainment, and cultural destination. The existing policy LU-3.8 (Leverage Downtown's urban nature and promote projects that will help achieve economic, fiscal, environmental, cultural, transportation, social, or other objectives of this plan.) is directly aligned with the objectives of a district energy plan.

   As the existing policies in this section speak to a mix of uses, and other sections of the General Plan appear appropriate to explicitly speak to energy conservation, encouraging emerging technologies, energy sharing, and renewable energy, the Land Use chapter may not be the most appropriate to insert language but it is possible.

4.a. Addition of an Action to Goal LU-3 - Downtown (Ch 6, p 9, pdf 289)
Facilitate development projects that utilize an unconventional mix of uses to the benefit of housing and employment goals.

Methodologies for Land Use Entitlement

Preliminary Review
The Planning Division offers Preliminary Review Applications in which questions of all kinds can be answered by Development Services staff (Planning, PW, Fire, Building, Housing, ESD, etc) in a formal response letter. The work is often encouraged in order for City staff to provide guidance and feedback prior to a prior to application submittal of a substantial and/or complex development proposal. In this instance, it may be appropriate to submit a document of applicable General Plan goals and policies and request feedback confirming that City staff is in agreement that the proposed shared energy/district energy proposal is in compliance.

Planned Development Zoning District
Although the use of Planned Development Zoning Districts are generally discouraged, they are utilized on a case-by-case basis for specific instances in which a unique mix of uses requires a more specific control of the development standards than the standard zoning code allows for. Language for the use of Planned Development Zoning Districts is identified in General Plan text in Implementation Policies IP-1.8 and IP-8.5:

IP-1.8 Use standard Zoning Districts to promote consistent development patterns when implementing new land use entitlements. Limit use of the Planned Development Zoning process to unique types of development or land uses which can not be implemented through standard Zoning Districts, or to sites with unusual physical characteristics that require special consideration due to those constraints.

IP-8.5 Use the Planned Development zoning process to tailor such regulations as allowed uses, site intensities and development standards to a particular site for which, because of unique circumstances, a Planned Development zoning process will better conform to Envision General Plan goals and policies than may be practical through implementation of a conventional Zoning District. These development standards and other site design issues implement the design standards set forth in the Envision General Plan and design guidelines adopted by the City Council. The second phase of this process, the Planned Development permit, is a combined site/architectural permit and conditional use permit which implements the approved Planned Development zoning on the property.

A recently approved Planned Development Zoning district with a mixed use data center is the project at Ringwood and Trade Zone Boulevard, APN 244-17-061 PDC22-001, approved 5/23/2023.

USING DATA CENTERS TO DECARBONIZE BUILDINGS THROUGH DISTRICT ENERGY

According to the International Energy Agency, data centers will account for 6% of total energy use in the US by 2026, an increase of 30% from 2022. **Rene Haas, the CEO of Arm, a chip-design company, told the Wall Street Journal that "by the end of the decade AI data centres could consume as much as a quarter of all American electricity, up from 4% today".** This growth is competing with the electrification of our existing buildings that is essential to address the climate crisis, both for the essential raw materials and equipment needed to build the projects, and for the limited utility power needed to operate them.

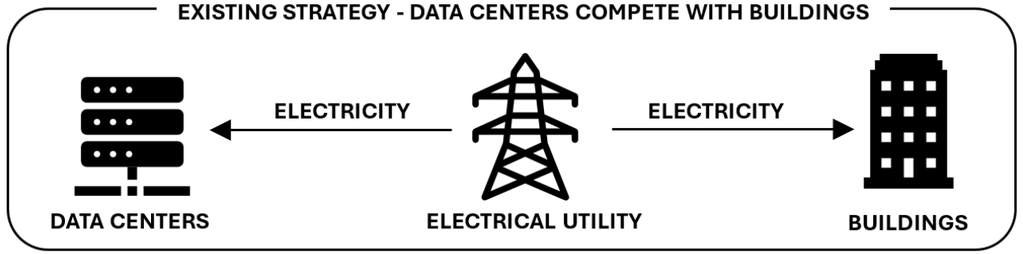
Virtually all the energy used by the servers and data processing equipment in a data center ends up as heat. Sophisticated cooling systems are used to keep them operating reliably and the companies building data centers have put enormous effort into energy efficiency, primarily though the use of 'free cooling'. However, another way to think of 'free cooling' is as 'wasted heat'.

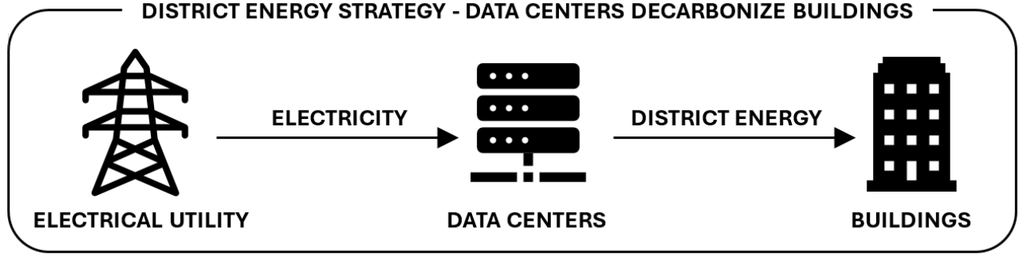
District energy systems can efficiently utilize waste heat from data centers, redistributing it to nearby buildings and allowing the construction of new data centers to support rather than compete with the decarbonisation of our society. Electricity supplied to a data center is converted into heat within its processing units. This heat is typically expelled into the atmosphere through cooling towers at temperatures between 85 to 95°F. However, district energy systems can capture this heat, channeling it through a network of underground water pipes to local homes, schools, hospitals, and businesses. These buildings can then use heat pumps to adjust the temperature for heating, elevating the heat to above 140°F for use in heating and hot water systems. Conversely, for cooling, the heat pumps can reverse this process, removing heat from buildings to cool them and then releasing any waste heat (a natural byproduct of cooling) back into the district energy system. When the system has an overall net cooling demand, centralized cooling towers at the data center and in customer buildings help release excess heat into the atmosphere.

From a data center operators' perspective, cooling towers that would otherwise be sitting idle for back-up or are underutilized throughout the year except only on the hottest days can then be utilized for the benefit of the district energy system, creating a revenue stream for the data center operator for what would otherwise be a sunk cost; these cooling towers can be operated to prioritize data center needs above all else to ensure uninterrupted business continuality, while simultaneously improving the bottom line.

Alternatively, a belt-and-suspenders approach can also be employed to leave the data center cooling towers dedicated only for the data center, and to co-locate additional cooling towers for the district energy system, funded, operated, and maintained by the district energy utility provider.

Utilizing district energy as a communal platform for heating and cooling, and coupling it with data centers, eliminates the need for polluting gas boilers and costly electrical upgrades required for decarbonizing individual buildings, while simultaneously improving the reliability, resiliency, and economics of data center operations.

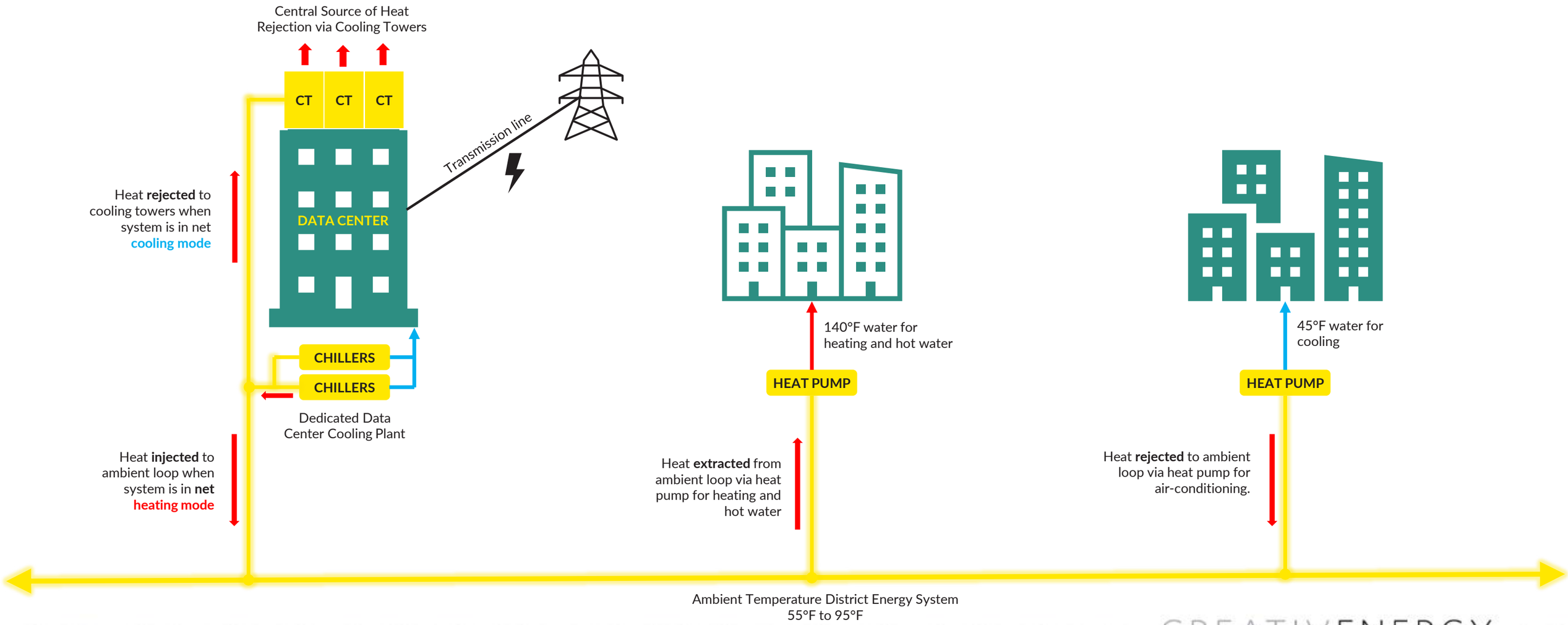




SAN JOSE DISTRICT ENERGY

Putting Data Center Waste Heat To Productive Use

Electricity powers the data center, which in turn produces heat. This heat is channeled into an ambient temperature district energy network designed to distribute thermal energy, allowing nearby buildings to use it for their heating and hot water needs. Heat pumps at each building can then draw from this energy network, raising the water temperature for heating purposes. Conversely, during warmer months, these heat pumps can work in reverse to extract heat from the buildings to cool them and release it back into the network for use by other buildings. If the neighborhood does not need this excess heat, the data center can dispel it into the air through central cooling towers.



CREATIVENERGY

A Net Zero Energy & Data Solution for San Jose

Over the next 5 years, our plan is to construct between 170 – 200 MW of high-density compute capacity across a network of edge data centers in downtown San Jose. An implementation of this scale will position the city as a
'Center of Excellence' in the competitive global landscape for artifical intelligence while also serving as the foundation for a new low carbon district energy system.

For every 1 unit of electricity delivered to the data centers, roughly 1 unit of low carbon heat energy can be captured and recycled through the district energy network. The system has the potential to serve all of downtown – including SJSU and Google's Diridon campus - with low carbon thermal energy.