PIONEERING THE FUTURE:
CARBON NEUTRALITY ROADMAP

FOR THE EMPIRE BUILDING CHALLENGE

Hines

HUDSON SQUARE PROPERTIES

19 November 2021

Version 1.1

Pioneering The Future:
Carbon Neutrality Roadmap
For The Empire Building Challenge

The Empire Building Challenge (EBC) is a multi-phase initiative designed to support replicable and scalable low carbon retrofit approaches to achieving carbon neutrality in existing tall buildings. Announced in the 2020 State of the State, EBC is a public-private partnership between New York State Energy Research and Development Authority (NYSERDA) and leading commercial and multifamily real estate portfolio owners. EBC will demonstrate innovative low carbon retrofit solutions that reduce buildings' energy consumption and greenhouse gas emissions, and are scalable and replicable across New York State.

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EXECUTIVE SUMMARY

With the backdrop of the global economy gradually recovering after the COVID pandemic and the new emission pledges being made with the COP26 climate negotiations, we stand at an inflection point where immediate inaction will lead to catastrophic consequences for current and future life on the planet. The energy transition is at the core of a low carbon economy and energy efficiency remains the most effective tool to reduce fossil fuel input in energy production – financially, technically, and politically. With the mission to transform the building sector that contributes 67% of GHG emissions in NY, we have created a comprehensive strategy, with multi-disciplinary, multi-national and multi-stakeholder collaboration to bring circular energy infrastructure as a retrofit opportunity for the real estate sector. Technologies are available, proven cases have already been established around the world and its impacts are obvious. By aligning our plan with natural capital deployment, we have shown that 345 Hudson Street, a 1930s building, can reduce its operational carbon footprint by 85% in less than a decade. The peak load can be reduced by 80%, essentially giving back energy to the grid, thus supporting electrification of transport and industry. Our plan is simple and our ambition is bold. We cannot let this opportunity slide — the time for energy efficiency has come and it is ready to be scaled.

Michael Izzo
VP - Carbon Strategy, Hines

‘In response to carbon reduction, we must act now and move quickly. Collaboration, co-creation and co-operation are key to finding solutions and replicating them at a large scale, which is necessary. That is what we are striving for at Hines.’

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Hines

urbs. URBAN SYSTEMS

BURO HAPPOLD

MODIO

BLUE PRINT POWER

NODA Intelligent Systems

BLOC POWER

ENERGY MACHINES

IFC International Finance Corporation WORLD BANK GROUP

Creating Markets, Creating Opportunities

Willis Towers Watson

THE PROPERTY

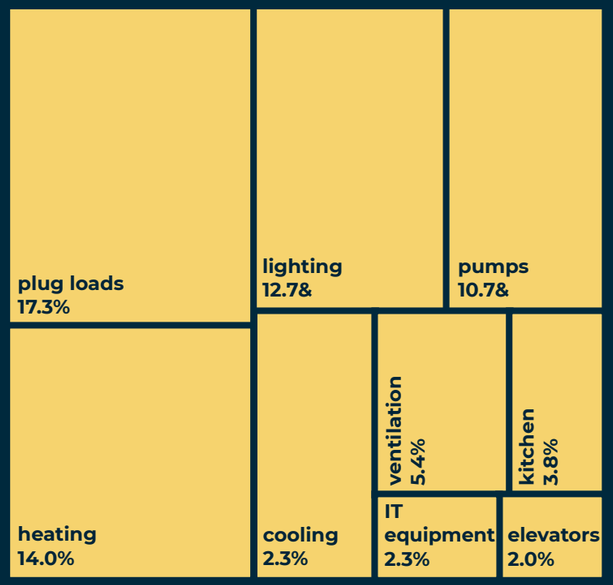
345 Hudson Street (345H) built in 1931 occupies the majority of the block between King and Charlton Streets, with over 980,000 square feet across 17 stories. With floor plates as large as 60,000 square feet and ceiling heights up to 12'6", the building creates a welcoming environment for tenants that appreciate timeless architecture while requiring the amenities expected in a modern, class building. These expansive floorplates previously housed printing presses once occupied by Bowne & Company. The original terrace setbacks and brick façade enrich the authentic lower Manhattan skyline and are a nod to Hudson Square's heritage, formerly known as Manhattan's printing district. The current building provides heating through centrally located, landlord controlled natural gas boilers which produce steam for distributed cast iron radiators throughout the tenant floor space. The cooling system is a closed and open loop condenser water system with cooling towers located on the roof that serve Direct Expansion Air Conditioning units at each tenant floor. A Heating & Ventilating unit connected to the steam system is located at the roof to provide Outdoor Air to the individual Main Equipment Room with no energy recovery or cooling capacity.

80
kBTU/SF/Y
EUI

6.79
kG CO_2e/SF/Y
GHG emissions

4.5
mn gallons/Y
water consumption

ENERGY USE



FACT FILE

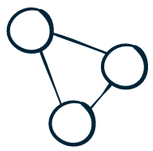
LOCATION IN NYC

WHAT IF A COMPLEX PROBLEM CAN BE SOLVED BY A SIMPLE SOLUTION?

There is a simple solution to the complexity of decarbonizing buildings. Over the past three years, the HSP team with partners in engineering and building science have explored and implemented electric-powered heating and cooling systems. The results show that electrification technologies have the potential to reduce the carbon emissions of existing office spaces instantly by nearly 60 percent, for negligible cost to business-as-usual and without changes to the building envelope. Our commitment to meet NYS and NYC legislative goals is evident in the new development at 555 Greenwich where we have full control, and we are now taking those lessons to existing building retrofits in collaboration with our tenants. While these solutions are novel, we are still facing the status quo inertia, perceived risks, typical asset management strategies among other challenges. We want to be the catalyst not only for a large scale change in our portfolio, but also as a showcase for the entire market. Although each building will be different, the holistic energy recycling and ‘upcycling’ principles will be consistent. The built environment holds the potential for a market transformation to all-electric just like the electric vehicle revolution. This report will show in detail how this is all accomplished.

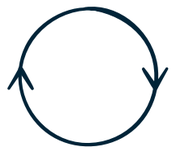
OUR APPROACH

COLLABORATIVE



Moving away from a linear energy supply system, we are pioneering a circular and sustainable infrastructure system at the lowest level of energy supply and at the highest point of consumption. The proposed carbon reduction solutions require the

CIRCULAR



complete collaboration of our key stakeholders — from the tenants who reside within to real estate developers. The comprehensive strategy is regenerative, accessible and abundant by design. It is guided by holistic thinking; supports the well-

COMPREHENSIVE

beings of humans and the natural environment; leveraged by globally proven applied technologies; and backed by innovative digital and data solutions.

67%
GHG emissions in NYC arise from buildings

2.5
billion square feet office space can be retrofitted in NYC

19
billion USD spent annually on energy by New Yorkers

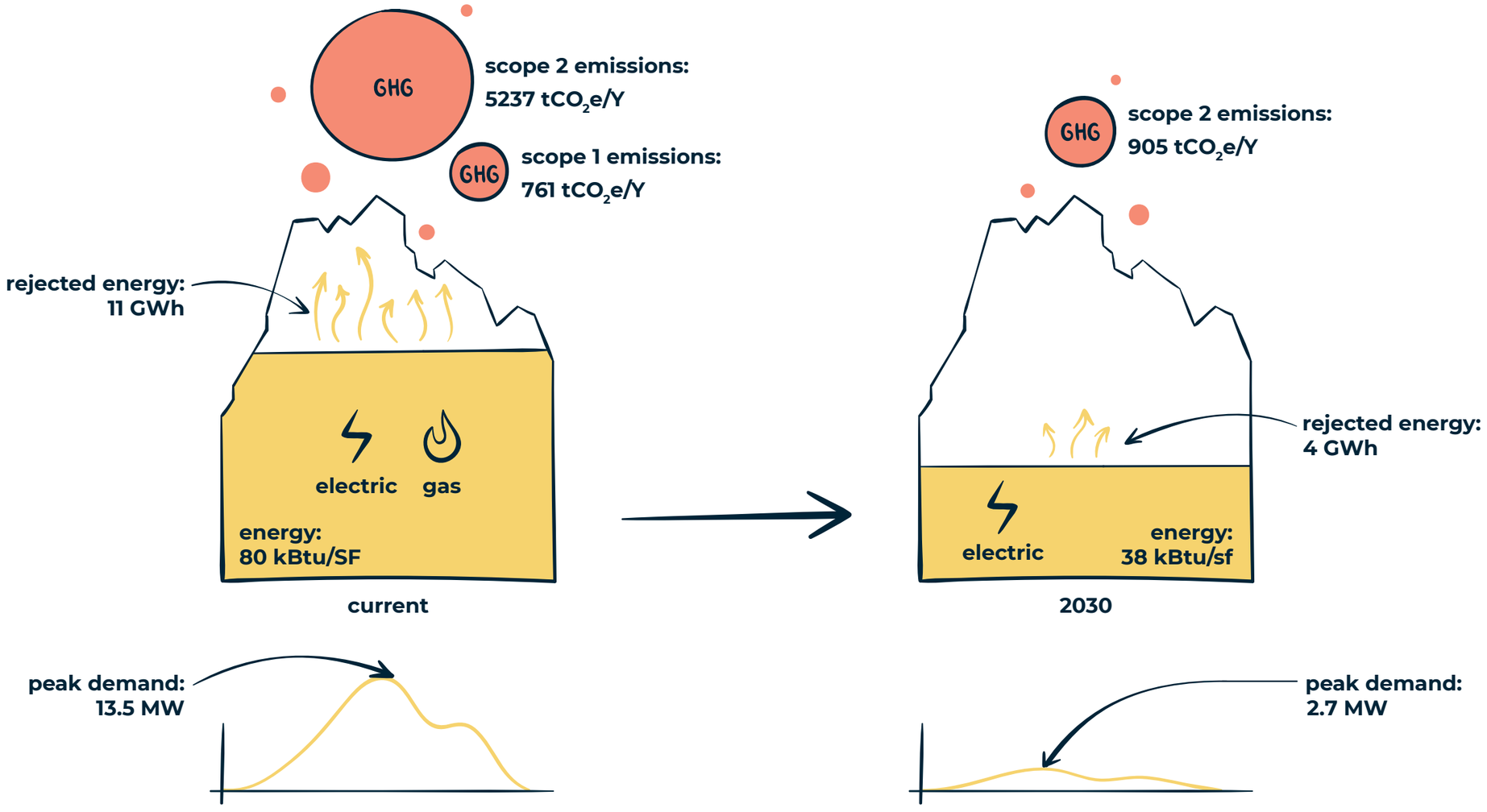
20
billion USD market size for green infrastructure in NYC

ELIMINATING SCOPE 1 EMISSIONS
GETTING RID OF ON-SITE GAS BOILERS

MINIMIZING SCOPE 2 EMISSIONS
REDUCING ENERGY INTAKE FROM THE GRID

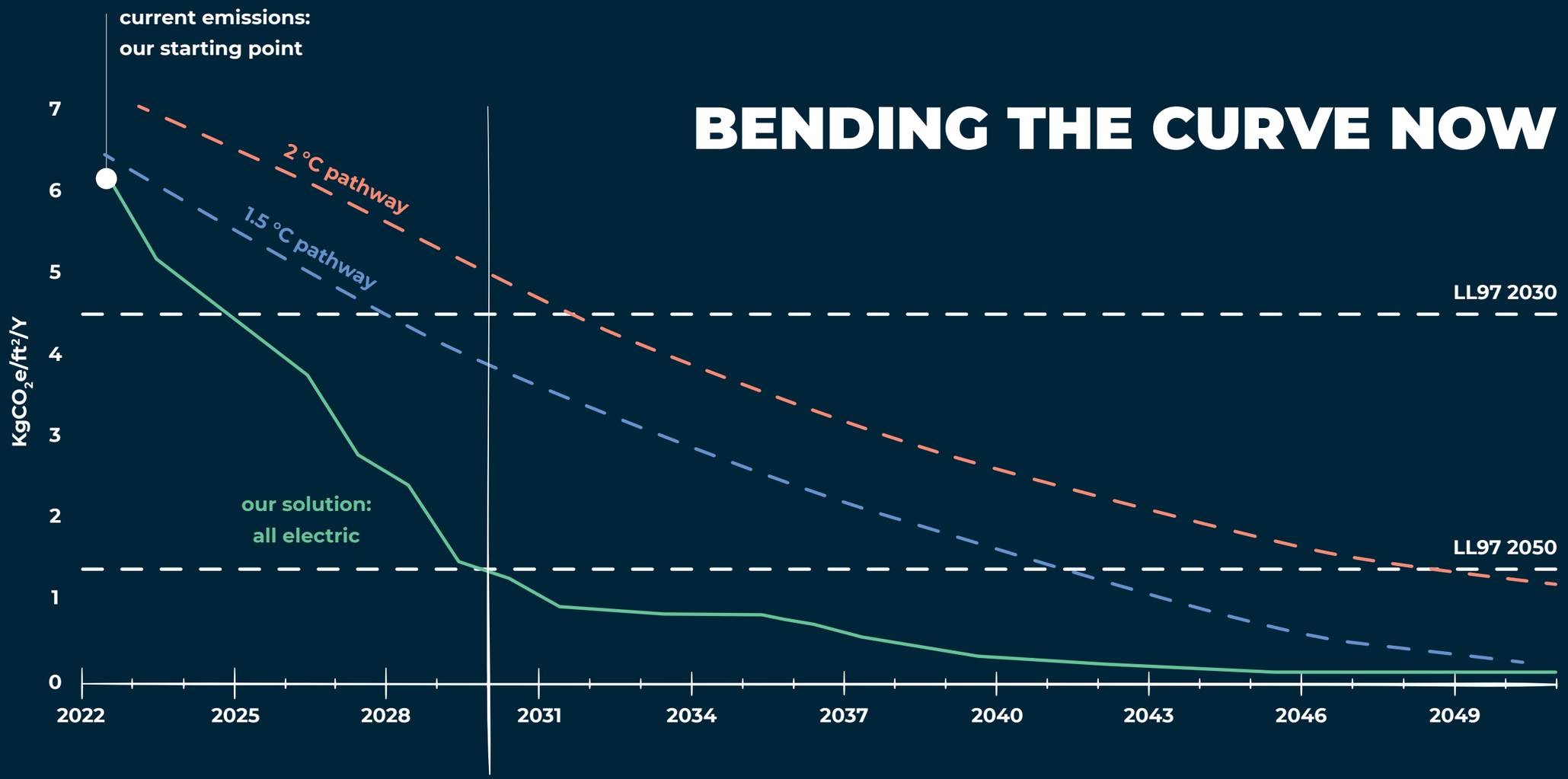
INFLUENCING SCOPE 4 EMISSIONS
INSPIRING NYC, NY, USA AND THE WORLD MARKET

IMPRESSIVE RESULTS



From a brown asset to a deep green asset

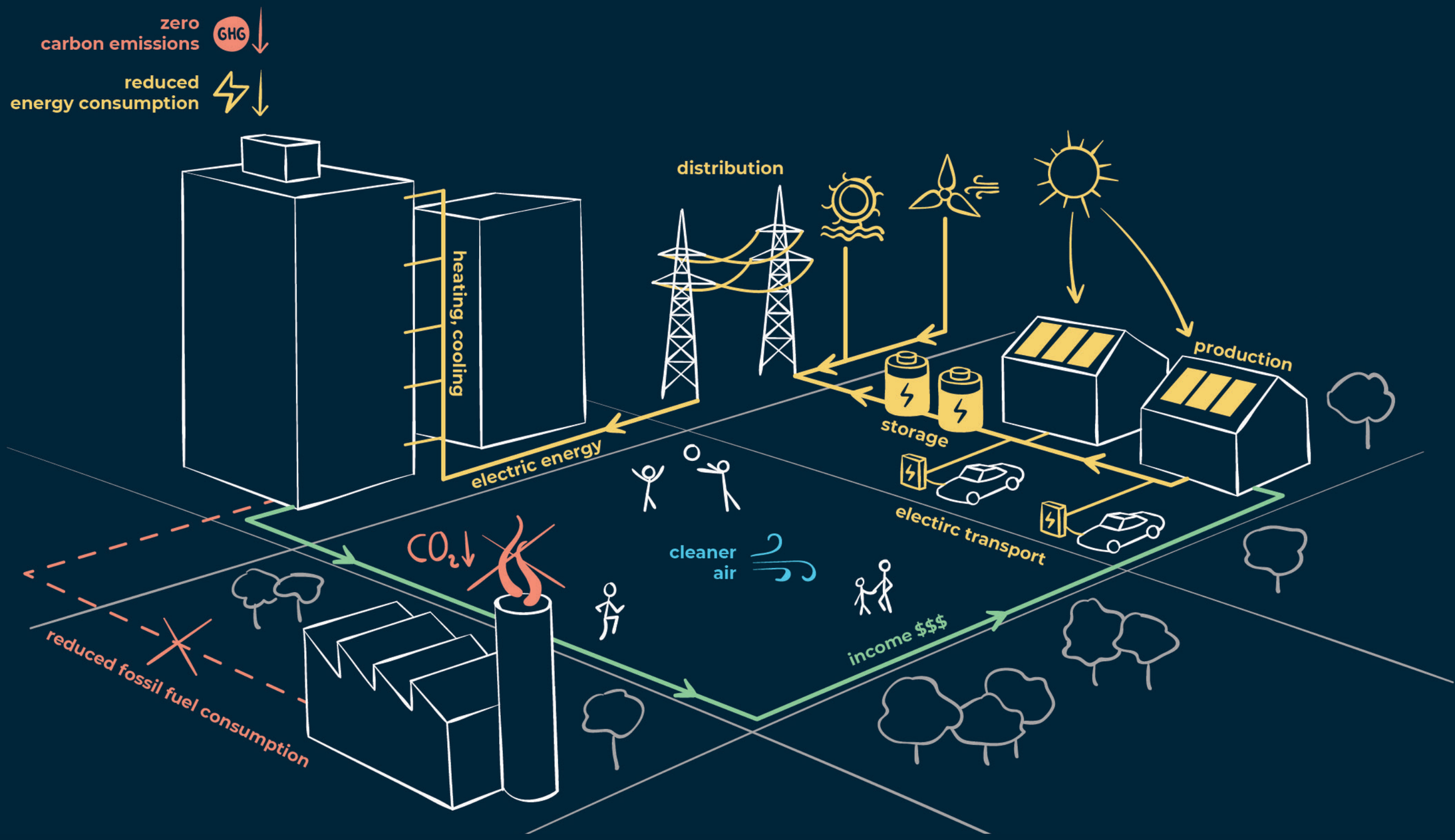
BENDING THE CURVE NOW



FUTURE IS ELECTRIC

With the energy transition ahead of us, research has shown that electricity will become the core of the energy systems. It will play a key role across all sectors, like transportation, buildings and heavy industries. By 2040, half of the total energy consumption will be supplied by electricity. Energy efficiency will become a key to deriving maximum benefit from the energy transition. The energy sector is a major source of global emissions, and an investment in clean energy can drive jobs and development simultaneously. Research shows that an adoption in clean energy needs to triple by 2030 to approximately $4 trillion to reach net zero by 2050. This means a huge decline in the use of and investment in coal, oil and gas. All coal and oil power plants will be required to be shutdown by 2040 to reach this goal, and be phased out immediately. Many energy efficient solutions for buildings are already available and can be scaled up quickly, creating green jobs and green investment opportunities. With an increase in renewable energy technology already on the way, 90% of global electricity will be from renewable sources, exponentially reducing the emissions from the electricity sector. Installing heat pumps in buildings — like our solution is deploying — is one key measure to ensure the building industry decarbonizes rapidly.

input energy	transmission efficiency	conversion to heat	total efficiency	ghg emissions
renewable energy	92%	heat pump 300-500%	270-460%	0
natural gas	97%	gas boiler 87%	85%	500 tCO_2e/gwh

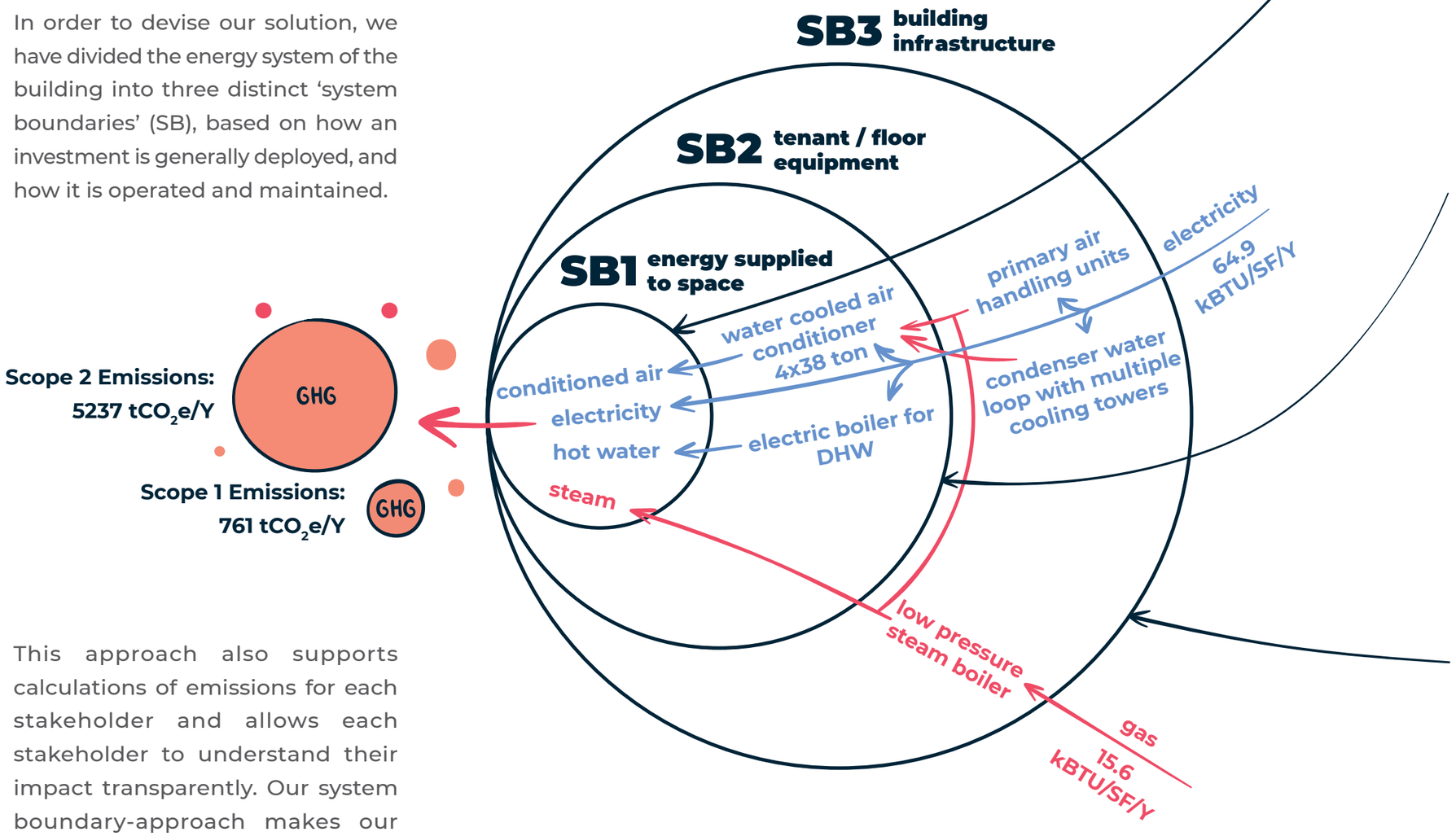


AN ELECTRIC ECOSYSTEM OF THE FUTURE

SYSTEM BOUNDARIES

CURRENT BUILDING ENERGY INFRASTRUCTURE

In order to devise our solution, we have divided the energy system of the building into three distinct 'system boundaries' (SB), based on how an investment is generally deployed, and how it is operated and maintained.

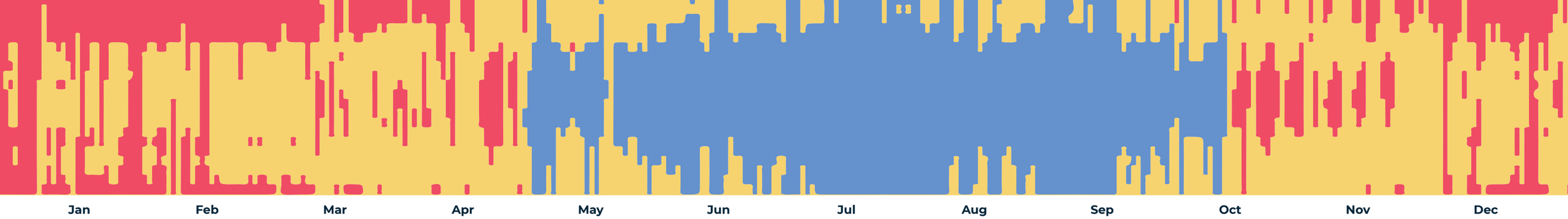


This approach also supports calculations of emissions for each stakeholder and allows each stakeholder to understand their impact transparently. Our system boundary-approach makes our solution comprehensible for rapid replication and scaling.

System Boundary 1 (SB1):
This includes the energy distribution to the space which is fully under tenant control. The landlord will incentivize this initiative through initial investments designed to meet tenants needs. Examples of typical equipment in this boundary include radiators, radiant panels, Variable Air Volume (VAV) boxes, Fan Coil Units (FCUs), chilled beams etc.

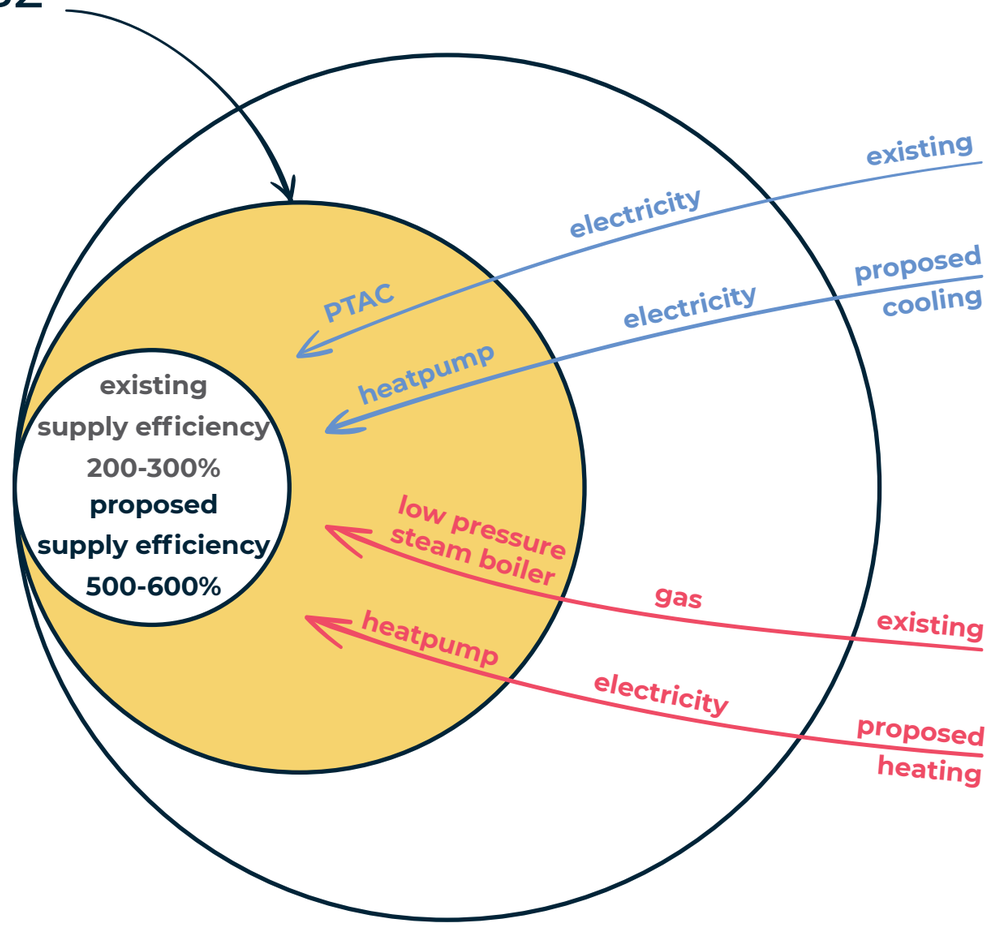
System Boundary 2 (SB2):
This includes the equipment which supplies energy to the tenant space (SB1). It is comprised of equipment on each floor and is supported by the building infrastructure. SB2 is commonly supplied & installed by the landlord. Examples of typical equipment in this boundary include Packaged Terminal Air Conditioner (PTAC), Air Handling Units (AHUs), Dedicated Outdoor Air system (DOAS), Hot water boiler etc.

System boundary 3 (SB3):
This is the building infrastructure, which the backbone of the entire energy supply. This is included in core & shell developments and fully under the landlord's control. Examples of typical equipment in this boundary include water cooled chillers, cooling towers, boiler plants, electrical sub-station, primary AHU, etc.



THE WEAKEST LINK - SB2

By dissecting the energy infrastructure with the system boundaries, we have been able to identify the weakest link within the existing system. The linear energy supply system is dependent on the building infrastructure which takes in the energy supply (SB2) to meet the indoor comfort (i.e., temperature and humidity) needs. Typically, this system is either directly connected to the grid – electrical and gas – or is supported by building infrastructure (SB3) and often has space constraint restrictions. The existing system in SB2 is not only inefficient, but is also incapable of capturing the efficiencies that can be created at SB1, SB3 or beyond the building boundary. Our immediate first step is to address the weakest link, as it is the most transformational asset within the building, while also magnifying the efficiencies within any part of the current system. This is the starting point of our solution.



COOLING 33%

HEATING 23%

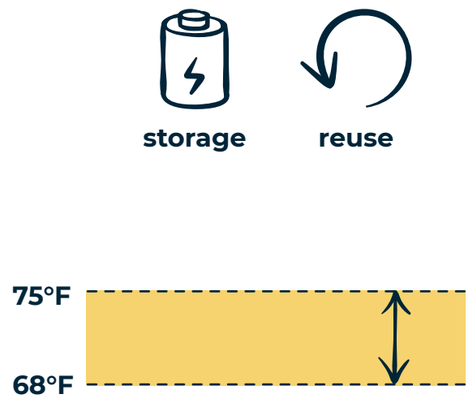
SIMULTANEOUS 44%

Looking at the annual energy profile for the tenant space, it is seen that it requires simultaneous heating and cooling for 44% of the time. The deployment of a heat pump to capture this diversity and recycle the energy closest to the supply is an excellent model for circularity in this energy system. Not only this will allow reduction in system size, but it will also transform the supply from the two distinct linear systems of electricity and gas to only electricity, leading to circular thermal energy supply as output.

SB1

TENANT MENU: END CLIENT IN FOCUS

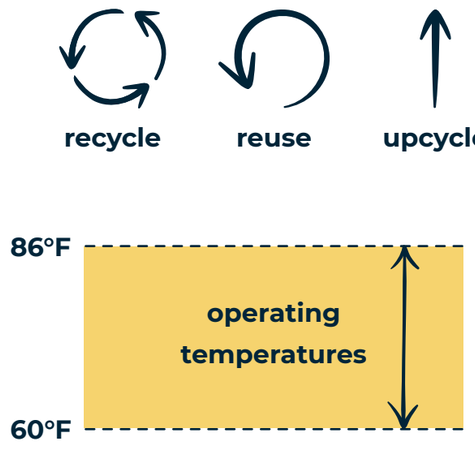
Our solution starts by giving tenants — the most important stakeholder for real estate developers — three distinct retrofit options for SB1. This will ensure a best-in-class indoor environment; 100% fresh air with no re-circulation to mitigate the spread of bacteria and viruses; energy efficiency and; carbon emissions in line with regional and global ambitions. This is achieved by using a hydronic energy distribution that works with temperatures close to the desired operative temperature. This allows the system to use the thermal inertia of the building structure and space, and also allows efficient local energy exchanges between zones.



SB2

TRANSFORMING THE WEAKEST LINK

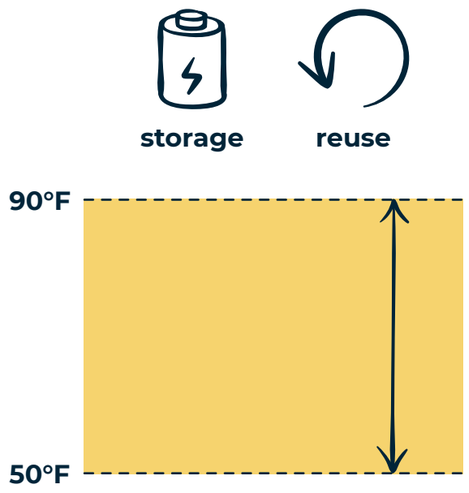
The SB1 is supplied energy by a Water-to-Water Heat Pump connected to the existing condenser loop with a two-stage compressor unit with constant operation, and it produces cooling and heat depending on the demand. The Heat Pump in the SB2 recycles the energy before demanding more energy from the building infrastructure. Another alternative is the addition of a DOAS on each floor to provide 100% fresh air, with a heat recovery efficiency of up to 95%, which is equipped with an indirect evaporative cooling exchanger. For 345H, the central primary AHU is replaced with high recovery efficient unit as a part of the building infrastructure – SB3.



SB3

AMBIENT LOOP: THE ENERGY ARBITRAGE

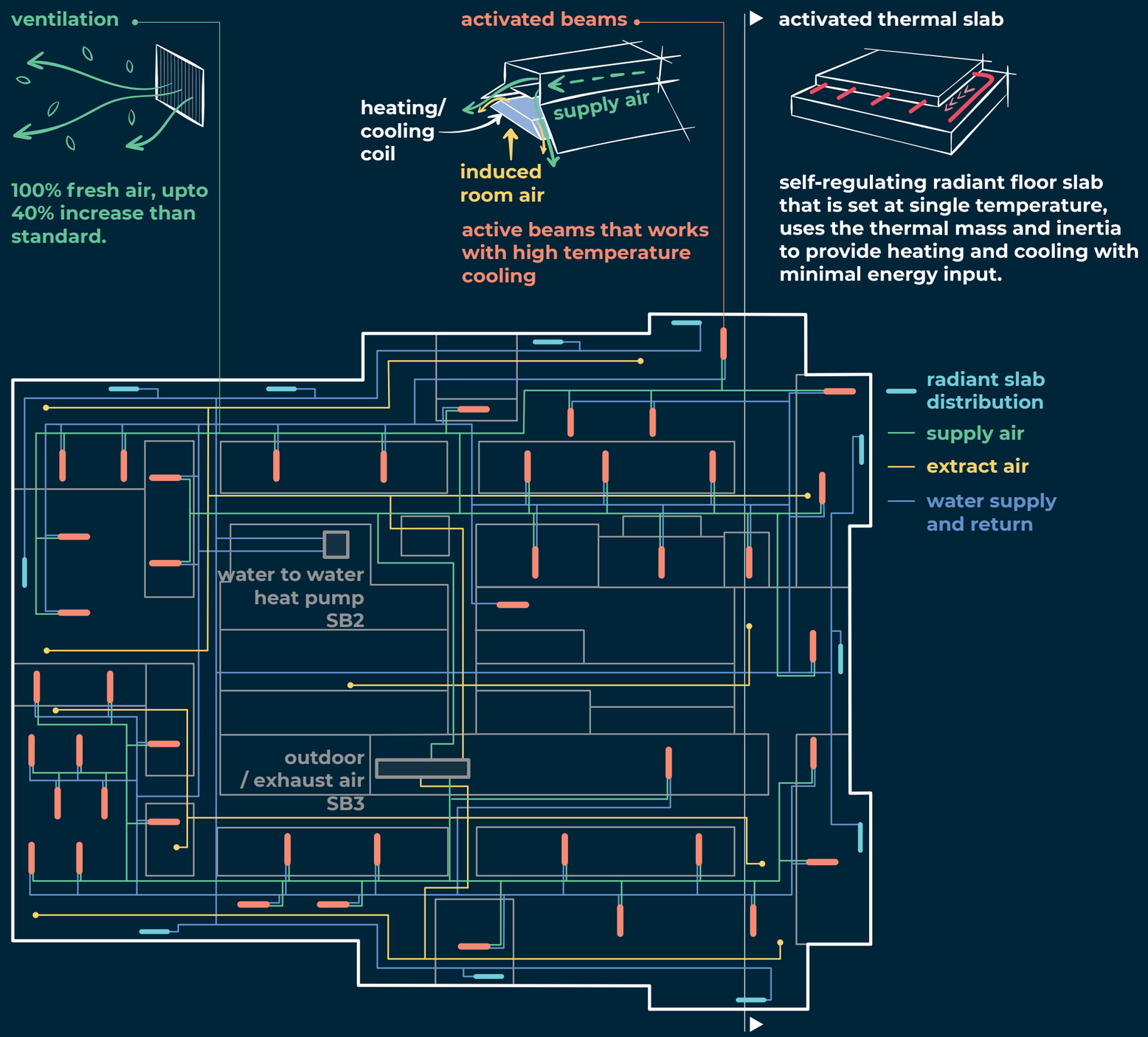
The condenser water loop when connected to all the floor level Heat Pumps will start allowing the rejected energy to be used by floors in need of heating. For 44% of the time, the tenant spaces require simultaneous heating and cooling. The system will keep the exhausted energy to minimum with using water as a medium and allowing waste heat from one floor to become an energy source for the other. The loop will also adjust itself with the ambient temperatures and allow the system to become a true open system where energy and mass can exchange. We call it ‘Ambient Loop’ and the exchange as ‘Energy Arbitrage’.



SB1 TENANT MENU 1

This solution gives maximum zoning options with independent temperature controls without compromising on the energy, peak loads or comfort. A large radiant surface is supported via an active ceiling, where chilled beams run on similar water temperature intervals as the slabs, and also supplying treated fresh outdoor air to the space. This design creates multiple efficiencies by energy storage and energy transfer with the radiant slab and energy supply with active ceiling. On the air-side, this acts on demand and acts as a quick regulator to provide thermal comfort. The ventilation system is designed to operate with 100 % fresh air while maintaining good energy efficiency. It gives huge benefits with energy storage, re-use and recycle within the space.

Operating temperatures
Radiant slab: 64.4° F - 82.4°
Active beams: 64.4° F - 73.4° F
Air supply: 60.8° F - 68° F
Total air flow: 7120 CFM

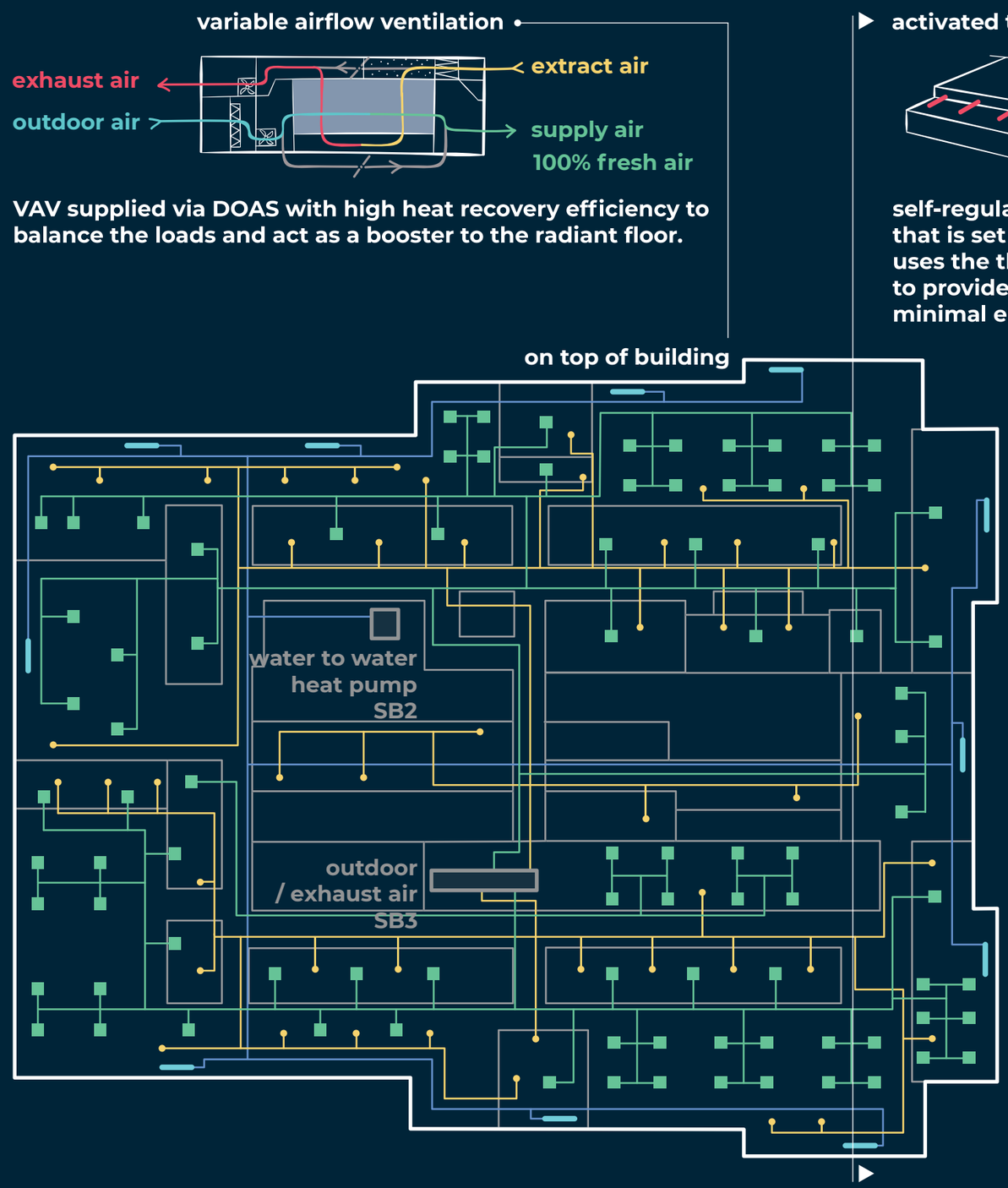


UNLOCKING THE FULL POTENTIAL

SB1 TENANT MENU 2

This solution uses a next generation radiant floor that works with minimal overhead air supply via a VAV system. This allows freedom of space use as there is no plumbing or extensive duct work required at the ceiling, and thus it allows great flexibility for adapting the space for multiple uses. The radiant slab integrates with the building structure and activates the building's own thermal mass to provide uniform temperature within the space, contributing to a high level of efficiency. The radiant slab covers the base energy load that also acts as an active thermal energy storage. The slab is maintained at a constant temperature with self regulating control that allows water to move energy between various parts of the slabs to achieve equilibrium. The benefits are energy storage, demand response and excellent comfort.

Operating temperatures
Radiant slab: 64.4° F - 82.4°
Air supply: 57.2° F - 72° F
Total air flow: 7525 CFM

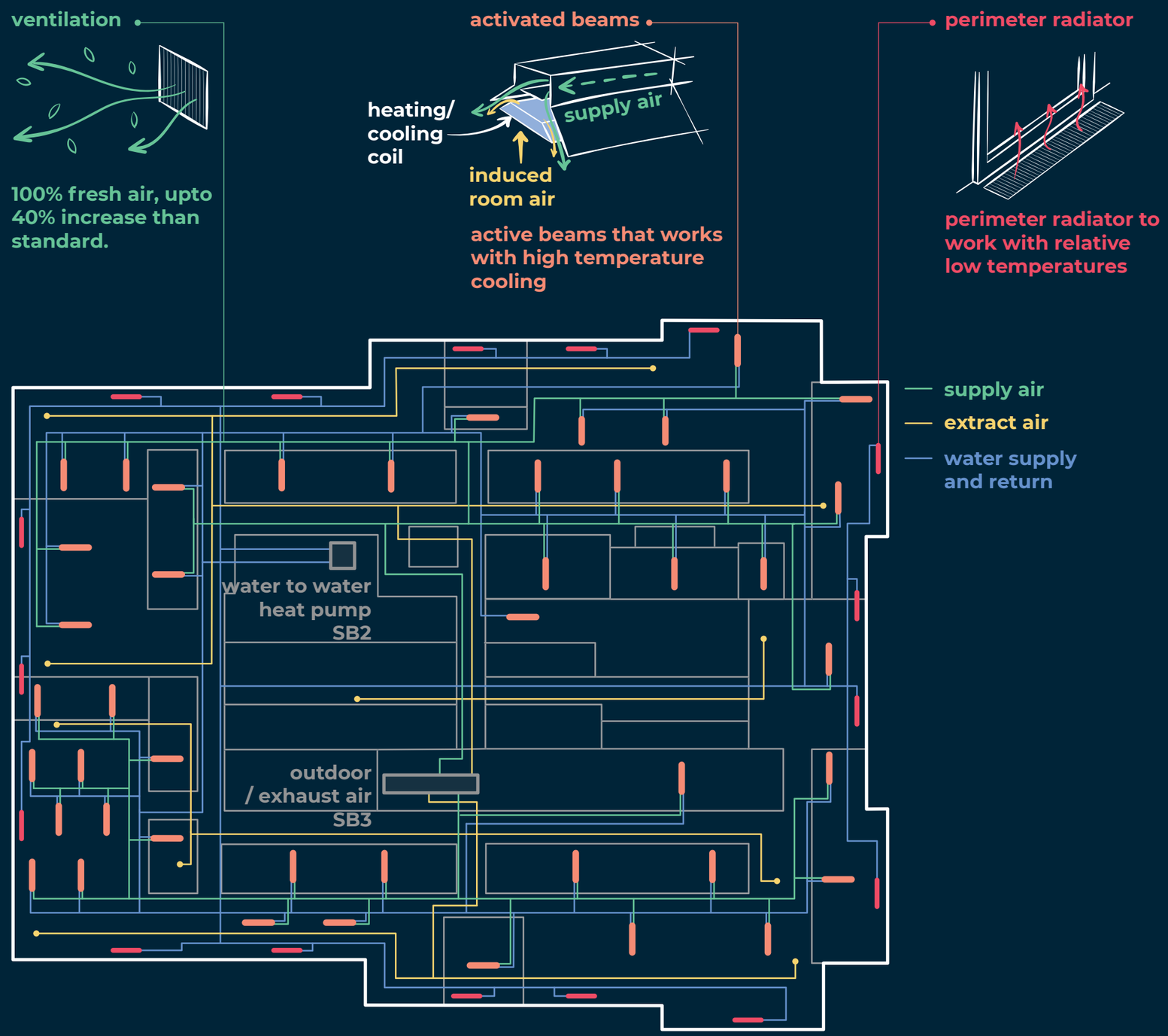


ACTIVATING THE THERMAL MASS

SB1 TENANT MENU 3

The solution turns ordinary chilled beams to active regulators and energy recyclers. By circulating close to ambient constant water temperature and allowing the water to circulate non-stop, the active beams will start moving energy from one space to another, while absorbing and releasing energy in the process. This will regulate the temperatures in the zones before more energy is added to the system. The air side system balances the quick changes and adds instant energy when needed. Perimeter radiators are provided to keep drafts at bay and for keeping comfortable temperatures during colder days. The solution not only reduces energy consumption, but it also reduces the peak load effect whilst creating best-in-class indoor environment. Quiet, comfortable, healthy and efficient.

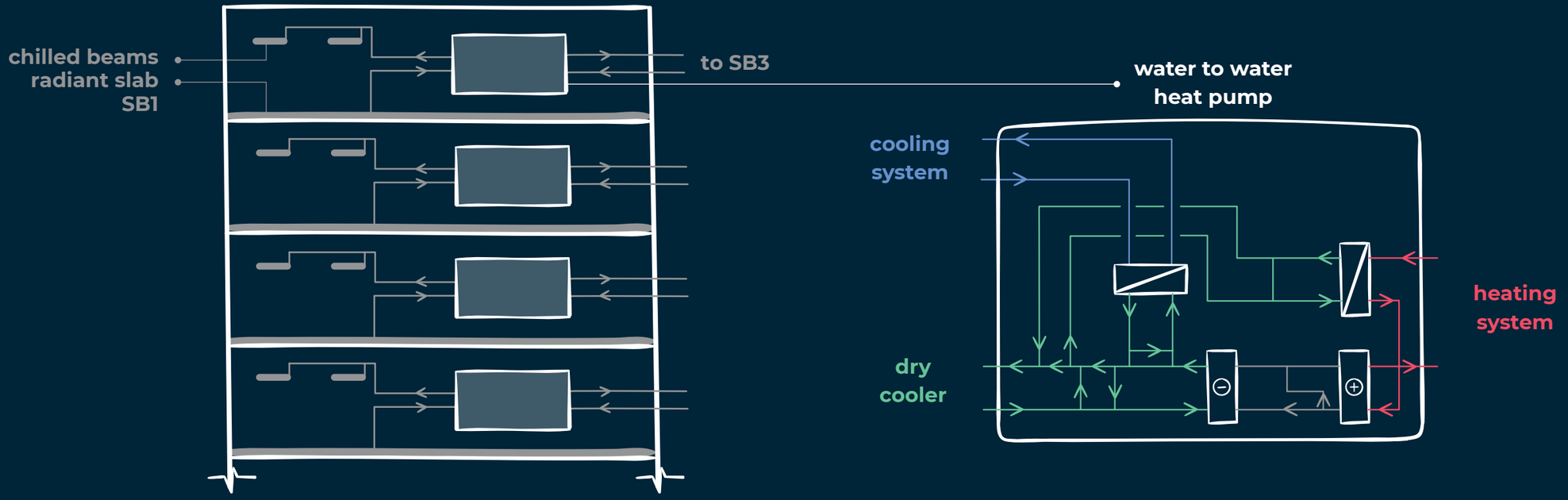
Operating temperatures
Perimeter radiator: 45° F - 35° F
Active beams: 64.4 ° F - 73.4 ° F
Air supply: 52.2° F - 68° F
Total air flow: 8545 CFM



HIGH EFFICIENCY, CLOSE TO BAU

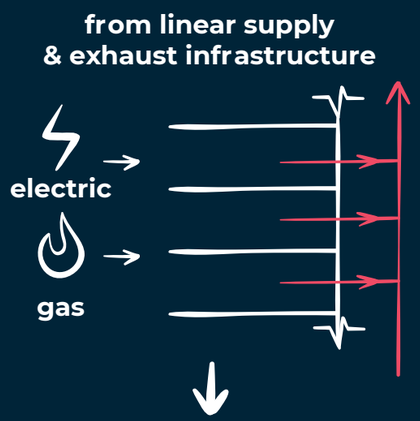
SB2 TRANSFORMING THE WEAKEST LINK

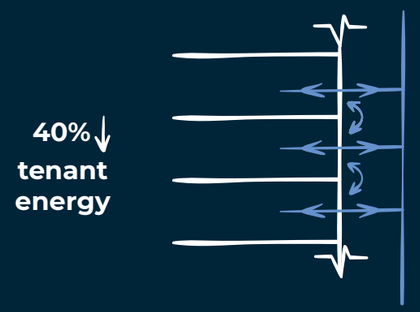
The heat pump as a technology has been in use for over a century; it is varied, versatile and can work in all building types. For retrofits, heat pumps offer a robust, scalable and proven solution that can meet the local, national and global emissions goals for real estate owners and users. With a holistic approach where the heat pumps are supplying low temperature lifts to meet the indoor environment requirements, it makes them extremely efficient. Due to the high efficiency and the ongoing rapid decarbonization of grid electricity, heat pumps have the potential to deliver significant CO_2 savings over natural gas. As the grid decarbonizes further in coming decades, the carbon savings delivered by heat pumps are expected to increase further towards 100%.

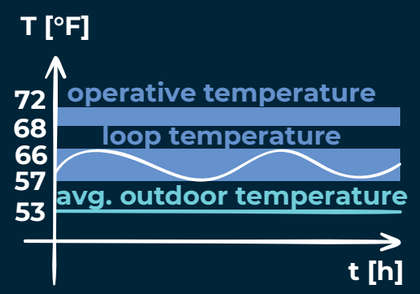


SB2 CAN NOW CAPTURE THE EFFICIENCIES CREATED AT SB1 AND SB3

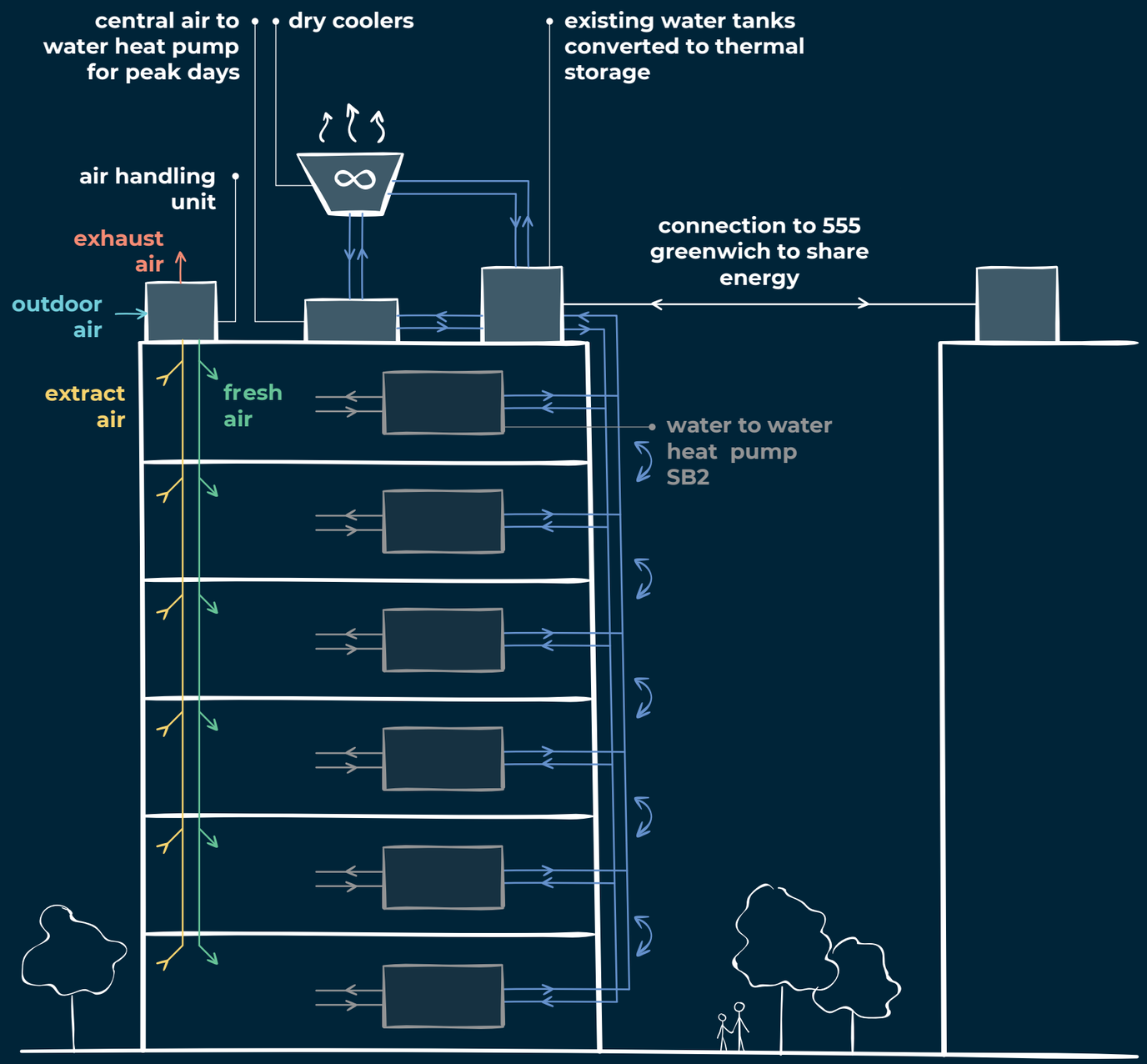
SB3 ENERGY ARBITRAGE AMBIENT LOOP







5X
efficiency
increase



COMPOUNDED EFFICIENCIES

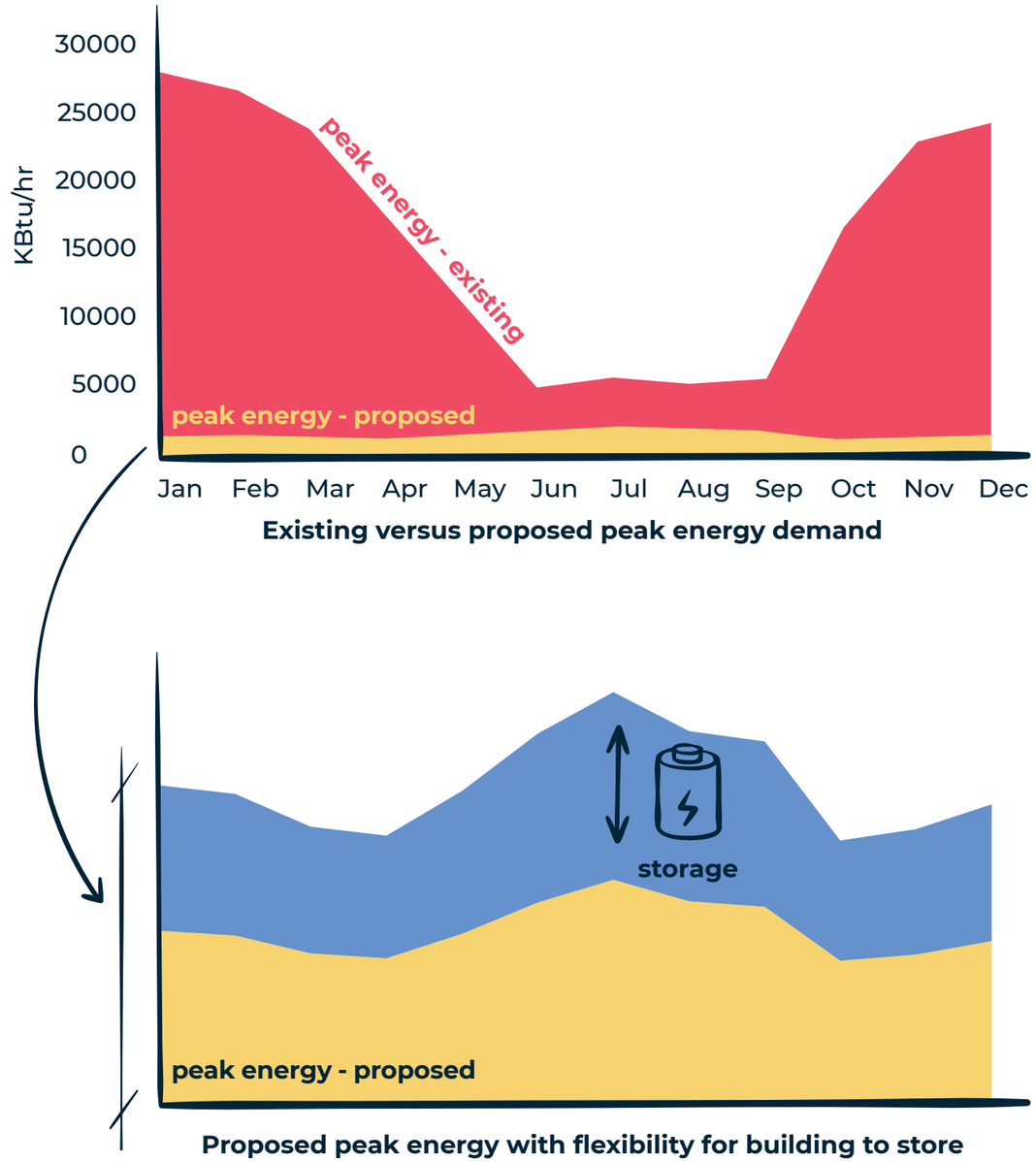
The SB1 systems efficiencies are exponentially compounded by a heat pump and DOAS system with high heat recovery installed within SB2. As presented earlier, this becomes the heart of the solution, where the heat pump will be able to capture, reuse and upcycle energy on each floor or tenant space (SB1). High heat recovery efficiency will eliminate the need for heating during intermittent periods and drastically reduce cooling during the winter season. With the SB1 and SB2 refined, every time a new tenant arrives, they come to an already energy efficient space. By choosing one of the options, they can actively contribute to the decarbonization of the building, increase comfort, reduce energy costs, and they have the opportunity to get a share in the emission saving benefits.

52%
energy reduction

85%
emission reduction

92%
peak heating reduction

67%
peak cooling reduction



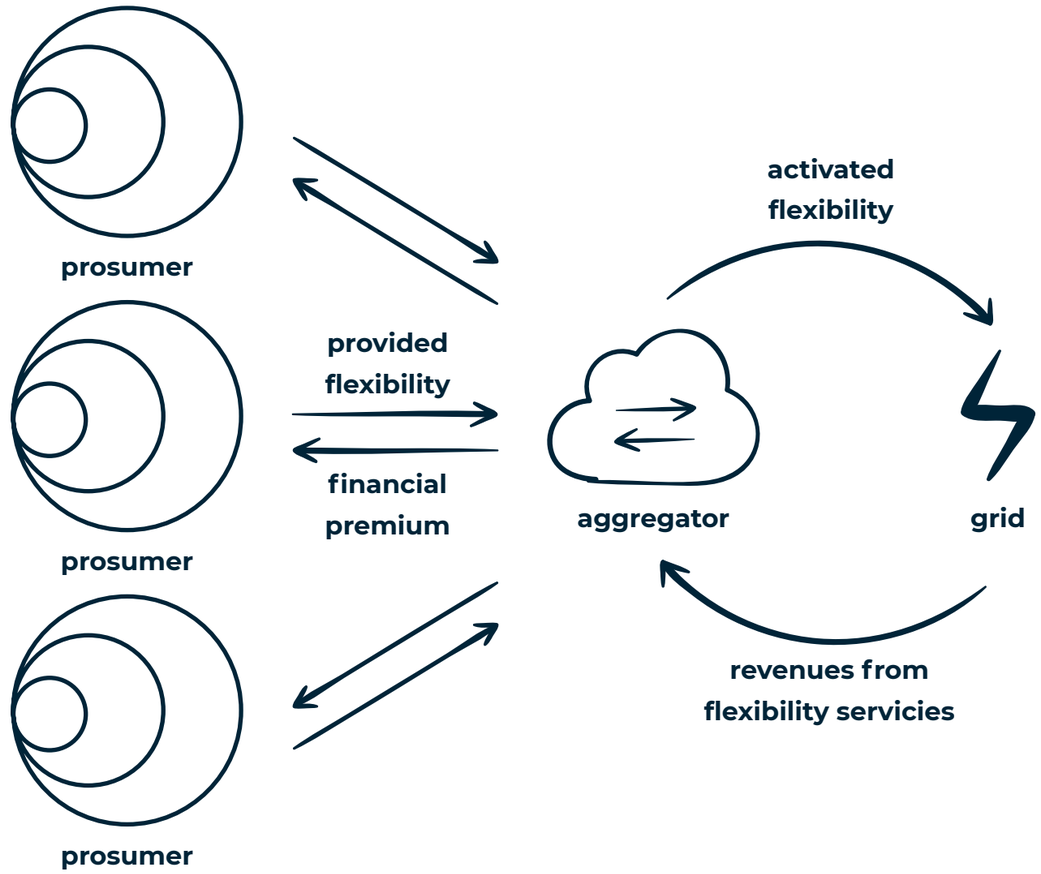
Existing versus proposed peak energy demand

Proposed peak energy with flexibility for building to store energy like a battery

PROSUMER: AN ASSET TO THE GRID

As floors adapt to the above solution, the heat rejection from the current system in SB3 will keep reducing. This will give the landlord the opportunity to start decoupling high energy consuming central cooling towers in favor of heat pumps on each floor, replacing current packaged terminal units. This will significantly reduce the total connected load from the building, moving from a linear supply to individual floors producing energy, and utilizing the existing condenser loop to create an intra-floor energy exchange.

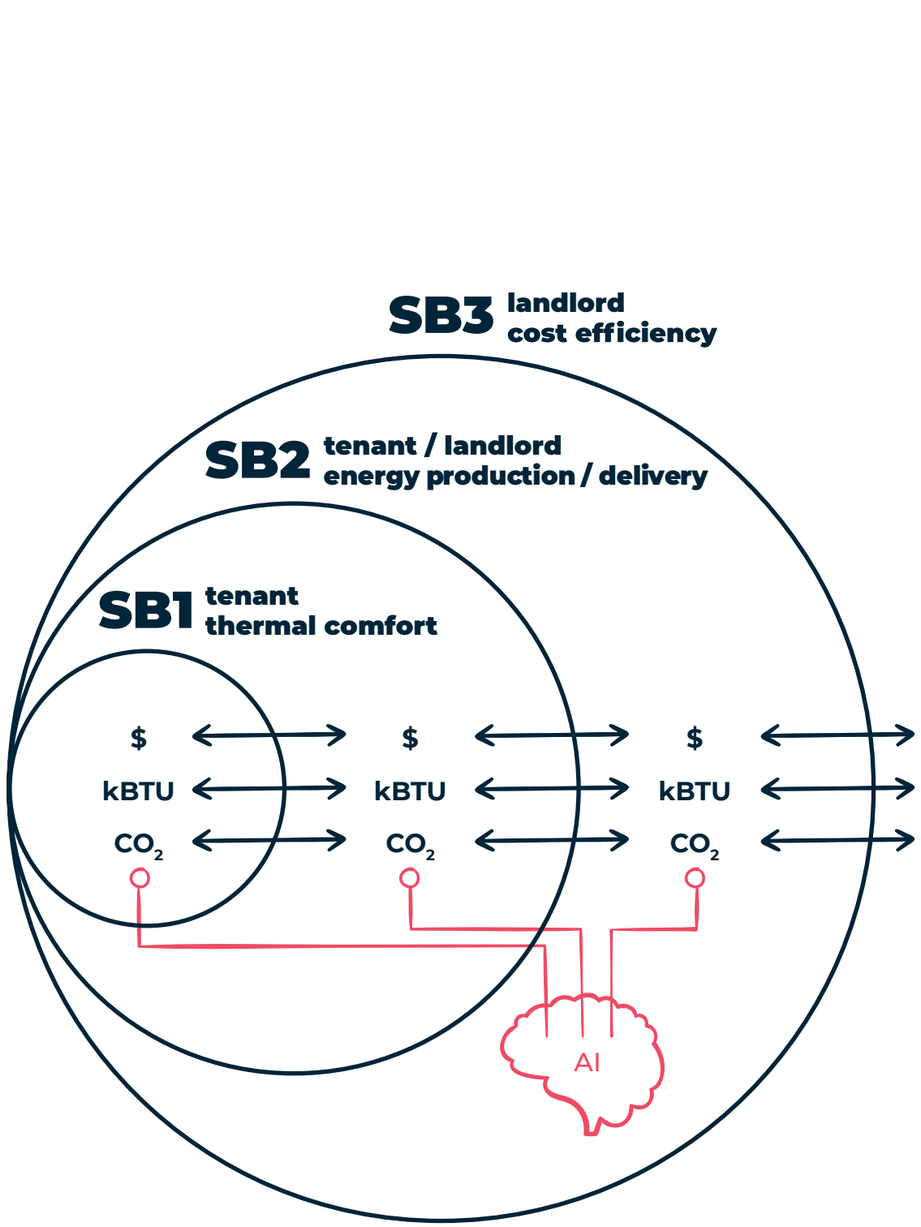
Asset owners and operators now have an active energy efficiency solution and will realize the full potential of their infrastructure both towards the grid and towards their tenants while generating positive cash flows. The result is an integrated building infrastructure that is balancing itself within all system boundaries with temperatures as close to ambient and taking advantage of the diversity and fluctuations in the demand. Our solution is holistic and system integration is key to reaching optimum efficiencies. This tactic contrasts with the common engineering practice of optimizing different components independently. At each system boundary, there will be key decisions on the building integration including control strategies and defining the level of thermal energy storage within the system. Once all the floors are connected, the thermal inertia of the building will be substantial to store or release energy in by prioritizing utility cost and/or renewable energy. This will enable the building to be seen as a distributed energy resource (DER) and will contribute to the balancing of the grid. The solution allows the building to become an asset to the grid that is an active contributor – a prosumer, as opposed to being a mere consumer.



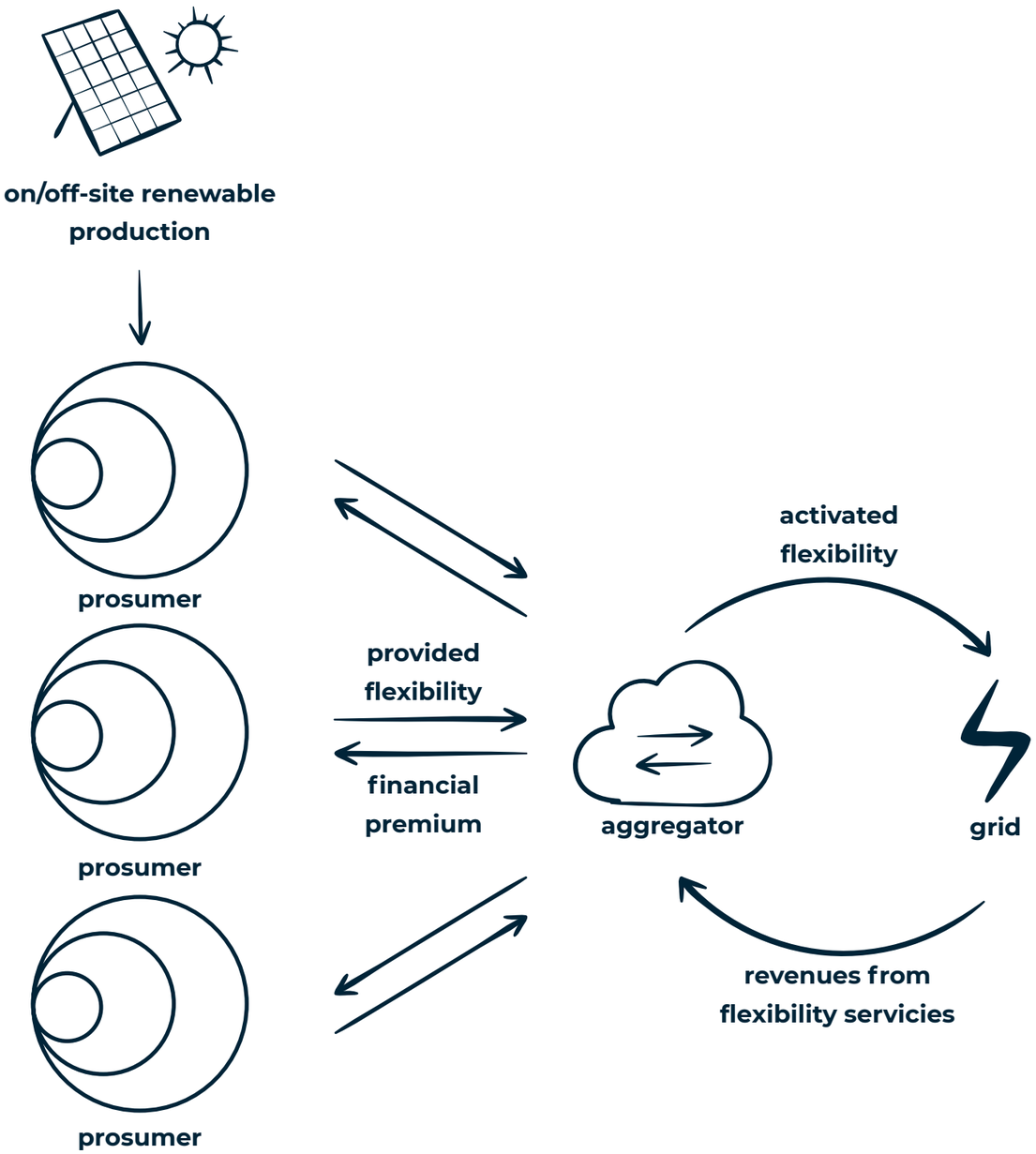
‘Prosumer’ buildings interacting with the gird

POWER OF DATA

Harnessing the power of Artificial Intelligence can strengthen the operation and optimization of a circular model. AI can enhance circular economy business models and optimize circular infrastructure by building and improving the processes for the control of energy flow. For our project, transactions are constantly happening within the building infrastructure such as data, money, energy and carbon emissions, and we have a system ready to capture all of these transactions in a transparent way. We will ensure data safety by securitization and standardization of various layers of data to produce crypto certificates. Alongside, Machine Learning will drive building flexibility to work in tandem with Blueprint Power for profitability and carbon efficiency. Our partners for the data solution Noda and Modio, have a system which connects locally to any already existing system using multiple industrial protocols. It is based on the latest open-source software with a strong security protocol. It minimizes the need for software competence locally and simplifies the installation process. The Noda and Modio system is already installed and all data is extracted and stored locally and securely transferred to the cloud. Our partner, Blueprint Power's cloud-based software platform, which has already been activated for 345H, uses advanced data analytics and machine learning to manage building-level distributed energy resources (DERs). It aggregates markets and automates the decision of when, and to whom, to sell the surplus energy, thereby maximizing revenue. This way, new Net Operating Income is delivered and energy data is organized and secured. Blueprint Power's modelling software has three distinct parts: energy data analysis, asset investment recommendations, and real-time optimization of energy asset operations.



Capturing, securitizing and standardizing transactions in SB1, SB2 and SB3 with the use of Artificial Intelligence and Machine Learning



Transforming buildings to become prosumers and interact with the grid

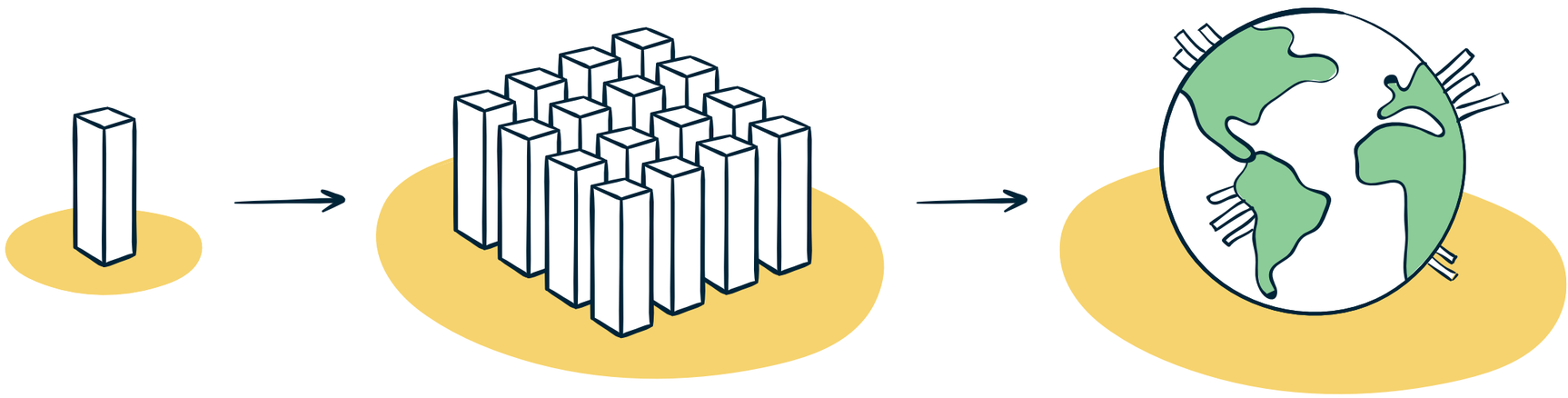
DERISKING TO SCALE

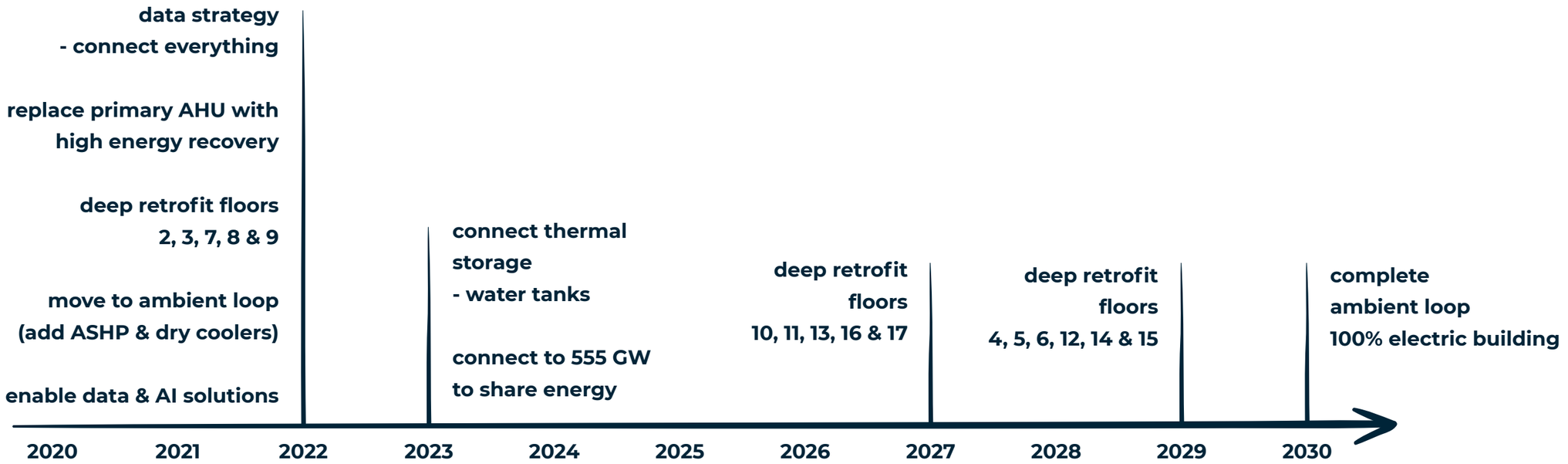
One of the key impediments to innovation is perceived risk, even though our solution is based on robust and proven technologies, market inertia discounts these innovations due to lack of deployment locally. Knowledge competence remains limited within the markets that do not have design and deployment experience. Thus, the HSP team has aligned with Willis Tower Watson and is actively working on an insurance policy that will largely reduce and/or eliminate the designer and contractor's risks. We are working to create an insurance mechanism to support the scaling and replicating of the energy efficiency solutions that will contribute to large carbon emissions reductions and help real estate owners meet Local Law 97. The insurance would aim to offer 'peace of mind' for owners during the adaptation of the new technology solutions in New York.

Willis Towers Watson has already been appointed to quantify the opportunity costs for 345 H and HSP to convert them into deep green assets using our proposed solution. Insurance once deployed would cover the following:
- Faulty Process (Hardware & Software)
- Faulty Instructions (Hardware & Software) - Unplanned Maintenance

The policy plans to provide cover for:
- The fines that asset needs to pay in-case of non-compliance to carbon reduction targets in line with Local Law 97.
- The annual shortfall in energy savings expected in space compared to the amount of savings insured by the policy.

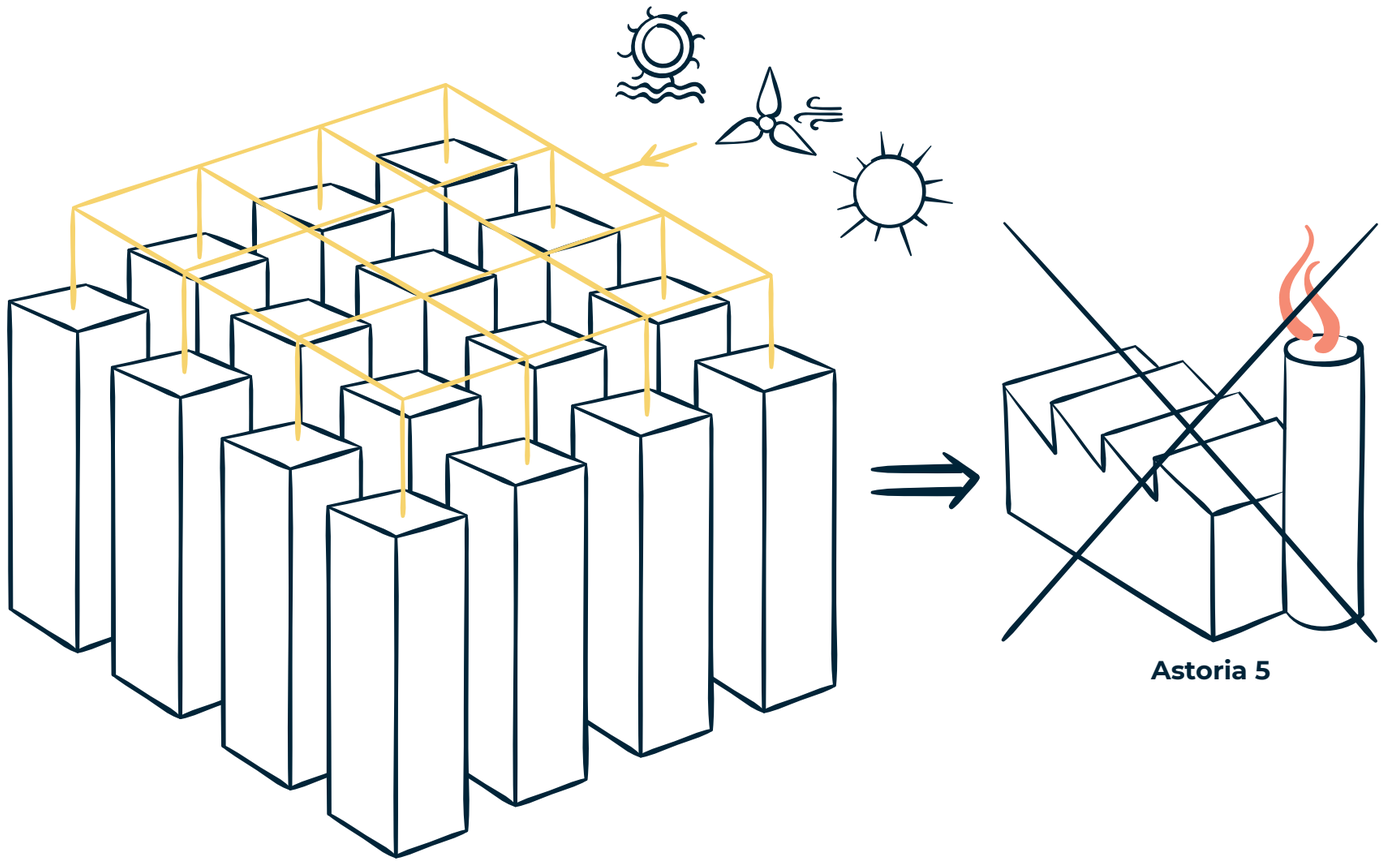
Insurance will help drive adaptation by making owners and tenants comfortable with the performance of the solution and that, in the unlikely case of underperformance of the technology, there will be a backstop in place. Scalability and enabler for financing in instances where the implementation of low carbon solutions requires sizeable investment by owners and drives a need for third-party financing will ease with a performance insurance solution. Potential tenants, especially corporations with ambitious sustainability goals, can be sure of the carbon emission reductions. Landlords will benefit with reduction of carbon emissions, cost efficiency, and of a higher appraised space.





THE DEPLOYMENT PLAN

THE BIGGER TRANSITION



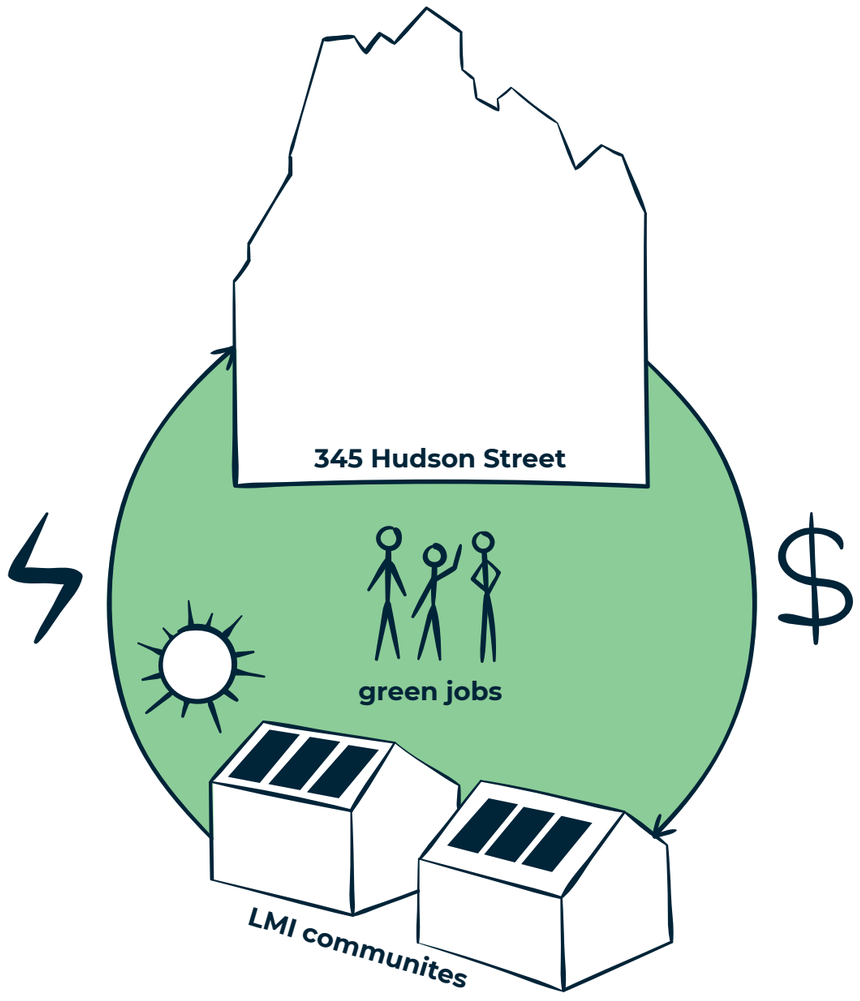
Astoria 5

We can shut down the Astoria 5 coal power plant if we retrofit the entire portfolio of all the EBC partners combined which is 130 million square feet of real estate in New York State

The scalability and flexibility of this solution makes it easy to implement across the state of New York and then the rest of the world. We are heading into an electric powered future, with clean grids that are powered by wind, solar and hydro-sourced energy. If all the buildings in New York city are retrofitted, then the magnitude of the impact on carbon emissions through the current unclean grid is massive. In the built environment space, up to 40% emissions can be conserved in existing buildings, yet these solutions are not implemented because of the perceived inconveniences. This provides for a huge market of potential to implement innovative green infrastructure solutions which will then contribute to the shift towards a carbon neutral world.

Robyn Beavers
CEO, Blueprint Power

‘In order for New York State to meet its admirable and ambitious climate goals, we will need to see relatively immediate and impactful measures towards decarbonization in the built environment. Creative, replicable solutions for low carbon retrofits are likely our best option towards tackling this vital issue. We are proud to support NYSERDA’s Empire Building Challenge towards advancing this endeavor and to partner with Hudson Square Properties and Hines towards the development of their innovative and promising proposal.’



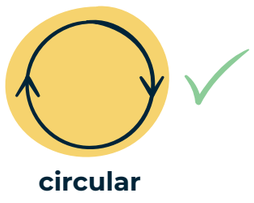
Increasing green jobs and sourcing solar power from LMI communities to reduce energy poverty

SOCIAL IMPACT

The solution will create green jobs and support climate and environmental justice by reducing fossil fuel emissions, specifically in peaking plant locations located in lower income communities — not Manhattan — where 60%+ of the energy is consumed. The solution, when scaled, will provide a pronounced reduction in greenhouse gas emissions, as well as remove expensive and noxious pollutant fossil-fuel-based peaking plants. Grid level climate transition reforms, while maintaining or increasing demand, are at a risk for an unjust transition since this would increase the cost of electricity rapidly with new infrastructure being created, thus increasing energy poverty. A unique feature of our design includes the delivery of solar panels on rooftops of Low- and Middle-Income (LMI) households by our partners at BlocPower. These installations will directly benefit the LMI groups with access to cheaper energy. Instead of paying the utility provider for electricity, the tenants in 345H will purchase electricity from LMI households. The system will benefit the LMI community, while cutting down our carbon emissions and creating a cleaner grid. Finally, the development of this new market will help overcome the long-standing socio-economic inequalities and strengthen New York's fiscal health to meet current and future needs. The easiest mitigation mechanism to CO_2 emissions is not emitting them at all, and our solution allows the building to eliminate and the grid to markedly reduce the energy production using fossil fuels by avoiding production of these emissions in the first place. The State of New York will benefit from being the frontline of implementing systems of the future today, as well as the scalability and replicability of the flexible solution proposed. Our aim of inspiring the commercial real estate industry in New York will also boost the Scope 4 emissions, making New York a center for green commercial infrastructure innovation.

ESG

Investing in sustainability is not only an ethical stance, but also a sound investment decision backed by a strong business case. Green buildings reduce investment risk to a great degree and provide an increased return on offer. The extent of our ESG coverage is substantial. Environmental factors in our project are addressed by reduction of energy consumption and moving towards circularity which has clear connections with mitigating the climate crisis, limiting the carbon emissions, reducing air pollution and ensuring energy efficiency. The social aspect primarily evaluates the link between decarbonization measures and tenant satisfaction, well-being and empowerment, while also being seen through the lens of energy poverty and climate justice agendas when applied to large-scale residential areas. Our social factors include people and relationships, which are addressed by data protection, health and safety for all the occupants and residents of the city, positive employee relations and positive community relations. Understanding the social context of the decarbonization process is needed to ensure the engagement level and avoid unintended consequences. Packaged together, this proposition makes a strong ESG case.



UN SUSTAINABLE DEVELOPMENT GOALS

The vision for the future needs responsible and climate conscious solutions. Our solution is aligned with the global vision of the UN's Sustainable Development Goals 2030 in achieving sustainability with a focus on local commerce, global climate and health. We aim to be at the spearhead of the transition in the construction industry to a low-carbon future by encouraging the development of scalable projects and mobilizing funds for projects which demonstrate the value and advantages of a circular built environment. The circular economy, with all its advantages also presents a multi-trillion-dollar economic opportunity. Our solution proposes a radical vision of 'circular real-estate' through sustainable infrastructure. We propose a ground level change with cost reduction and energy efficiency to the tenants, landlords, building operators, utility, and the New York State. We impact the following SDGs through our intervention:

THE FINAL OUTCOME: COMPOUNDED BENEFITS

We are driven to treat the root cause and not the symptoms from faulty existing linear systems. Bearing this in mind, we have proven how we are able to tackle multiple complex issues — from climate change to human health and well-being — with a simple solution. We have shown a technologically robust, climate conscious and socially sensitive solution to systematically decarbonize an entire industry. The solution is an all-in-one package and a win-win for all.

Will Sibia
Founder & CEO, urbs

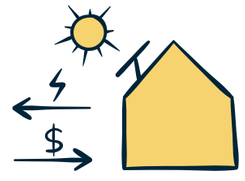
‘Creating infrastructure that enables social circular economies at the lowest level of consumption is key to fighting climate crisis, re-igniting the growth and bringing environmental justice.’

CO_2 REDUCTION

Reduction in carbon emissions through innovative energy solutions

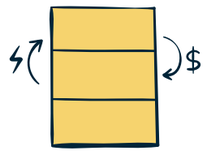
SOCIAL IMPACT

Social impact through creation of green jobs and solar energy for low and middle income groups



PROFITABILITY

Profitability for the tenant and landlord through managed costs during tenant change

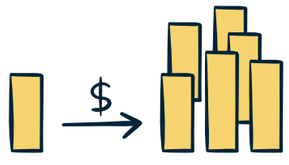


HEALTH

Health and well-being of the occupants through cleaner indoor environments

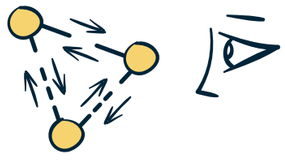
SCALABILITY

Scalability and replicability through effective deployment of capital



DATA SECURITY

Security in data through transparent sharing of information



Produced by

urbs.
URBAN SYSTEMS

urbs is a true systems integrator that delivers concept-to-completion sustainable solutions to green the built environment, using bottom-up & circular principles to drive environmental, economic and social impact.

Commenced by

Hines

Hines is a privately owned global real estate investment, development, and management firm founded in 1957, with a presence in 225 cities, and 25 countries for which Hines serves as investment, asset and development manager and third-party property management services. Hines has 165 developments currently underway around the world, and historically, has developed, redeveloped, or acquired 1,426 properties, totalling over 472 million square feet. The firm's current property and asset management portfolio includes 576 properties, representing over 246 million square feet.

For

HUDSON SQUARE PROPERTIES

Hudson Square Properties (HSP) owns and manages a 12-building portfolio of approximately 6 million square feet in the heart of Lower Manhattan. HSP is a joint venture of Trinity Church Wall Street, Norges Bank Investment Management, and Hines. Bordered by Soho, Tribeca, and the West Village, Hudson Square has become the destination for thought leaders and innovators across a vast array of high-profile tech, advertising, media, and information industries drawn by the energy of this vibrant neighborhood and the flexibility of the space.

CARBON NEUTRAL.
PLANET POSITIVE.