

# KEYNOTE INTERVIEW

## Time to get smart on urban infrastructure



*Smart city infrastructure can cut emissions while helping customers save money, says Ridgewood Infrastructure's [Michael Albrecht](#)*

Inefficient infrastructure is a major headache for cities around the world. The US Environmental Protection Agency reports that 30 percent of energy used in commercial buildings is wasted. Some US water utilities lose as much as half of their water supply through leaking pipes.

Michael Albrecht, managing partner at Ridgewood Infrastructure, believes smart city infrastructure will play a key role in helping cities to reduce their carbon footprints and manage their assets more efficiently. Investing in smart cities, he says, brings attractive returns while providing a host of ESG benefits to communities.

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**Q How do you define smart cities? What benefits do they bring?**

Smart cities infrastructure refers to the technology-enabled physical systems that can enhance quality of life, efficiency and overall sustainability of communities. This can be comprised of a variety of interconnected infrastructure, including smart transportation infrastructure (such as electric vehicle charging), smart energy infrastructure (such as LED street lighting or dispatchable energy storage), smart

water infrastructure (such as internet-of-things-enabled meters), and more.

Community member stakeholders are interested in many potential benefits of deploying smart cities infrastructure, such as reduced energy consumption, which translates to cost savings, as well as lesser greenhouse gas emissions.

We have found that interest in smart cities infrastructure has grown as technology has improved, and as utility costs have risen. Clearly, by improving the efficiency of infrastructure, smart city technology can reduce operating expenditures. The dollars that cities save can then go towards other social programmes.

However, we find that communities are often reluctant – or unable – to marshal the upfront capital resources necessary for the deployment of such infrastructure.

That is where we are playing an important role in the US lower mid-market. Ridgewood Infrastructure has pioneered investments in smart cities

infrastructure that is operating under long-term contracts. We make the upfront capital investment to deploy this infrastructure, which then operates on behalf of communities, which make monthly payments that comprise the non-correlated, stable cashflows we are looking to generate.

We focus on creating availability-

based contracts, which mitigates demand risk. And we also structure these contracts with inflation escalators or pass-through mechanisms to avoid the risk of margin compression.

## Q How did you become interested in the opportunities in smart city infrastructure?

It has been a journey. We have been in investing for more than two decades and we have seen how the infrastructure sector has matured over time.

The underlying infrastructure – whether it is transportation assets, meters, water utilities or electric utilities – have made use of technology to improve customer service, make pricing more efficient, or identify problems like leaks or outages. Seeing these trends got us excited about the opportunities where we could partner with cities and utilities, and ultimately help them serve their customers more effectively.

We realised these projects can be win-win for everyone. We have seen how smart cities offer ESG benefits, alongside very attractive risk-adjusted returns.

The investments that we have made have brought numerous benefits to communities. For example, we have helped to reduce carbon emissions through installing EV charging infrastructure in Hawaii and funding EVs for the Department of Transportation to replace diesel-running vehicles. This has also provided the state with cost savings, given the lower cost of electric charging relative to the fixed and variable expenses related to operating a diesel fleet.

## Q How large is the market for smart cities?

We estimate the smart cities industry represents more than a \$100 billion market in the US. It is a highly fragmented market – there are more than 100,000 municipalities where different types of smart city applications can be employed. The size and fragmentation

## Case studies: Hawaii and Jackson, Mississippi

### We have worked with numerous cities on implementing various smart city application infrastructure.

One example is our work with agencies in Hawaii, where we are engineering and installing EV charging infrastructure.

Under this partnership, we identify strategic geographic areas where Hawaii's government vehicles can utilise the EV charging stations. We engineer the appropriate design, construct the underlying infrastructure, and fund the cost of these activities. We structured the partnership with Hawaii under a long-term, availability-based contract providing long-term cashflow viability.

Another example is our work with Jackson, Mississippi. We partnered with the city and installed more than 40,000 smart water meters. We are leading the vendor selection for the meters based on our analysis of the city's current technological capabilities, the density of the customer base, cost considerations and the city's preferences.

This is one of the largest meter installations to be completed in this context in the US. Similarly, we structured this partnership under an availability-based contract to ensure cashflow stability and durability in through an economic cycle.

Our focus within all our partnerships is to create outcomes that benefit the communities on both an ESG and financial level. By achieving this, we create broad community support for the projects, which is critical for their long-term success.



make the smart city market attractive – but focus is critical.

The key thing for us is to segment the market, so that we can focus on the most attractive, highest-probability opportunities. One of our criteria is the availability of investment grade counterparties.

We look at metrics relating to energy intensity and carbon emissions, among others. Often, we are funding the underlying capital investment, designing the projects, implementing them, and in return for doing that work the counterparty will provide a long-term contract.

Many state or local governments are offering incentives, usually around tax benefits or rebates. But we don't take these into account in our investment underwriting – instead, they would be upside to our 'base case'.

That said, the type and number of such incentives can provide indications on how motivated cities are to enhance their infrastructure with smart applications. The average state in the US has 40 incentive programmes, although this number can range from nearly zero to more than 100. Regulatory policy focused on smart initiatives is another indicator; certain states have more than 20 initiatives that support smart infrastructure growth.

### **Q Can you extend the smart city approach to commercial and industrial customers?**

Absolutely. Those underlying commercial and industrial (C&I) participants typically use very substantial volumes of energy, which also creates carbon emissions. On average, most C&I buildings 'waste' around 30 percent of the energy they demand through inefficiencies.

We have worked with numerous C&I businesses to reduce both energy consumption and carbon emissions. We have helped these customers to install more efficient boilers and chillers, LED lighting and variable frequency

drives – all of which reduce energy consumption.

The C&I market within these cities is also large and fragmented; over \$50 billion and encompassing more than 20 million customers. This is another reason we focus on the smart city industry – the market opportunity is massive. This allows us to make a tremendous difference towards decarbonisation, while helping our C&I partners save money by reducing waste.

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### **Q What are the key challenges in investing in smart city infrastructure?**

Our biggest risk is that the city governments, or the C&I customers, fail to devote time and attention to smart city opportunities. They have many

competing priorities, both from a financial perspective and an ESG perspective, so it can be challenging to secure their time and attention to implement smart city solutions. There is an opportunity cost of cities being distracted and focusing on other areas.

Hence, we spend a considerable amount of time trying to streamline the process for our partners. We work with our portfolio companies and develop strategies to make it as easy as possible for cities and companies to implement smart infrastructure solutions.

For example, one of our portfolio companies provides turnkey solutions to allow our customers to proceed with those projects with us over a much shorter period. We put together the underlying proposals, we design the construction and the ongoing operations, to make it easier for our partners and help them to avoid that opportunity cost.

### **Q What do you expect for the future of smart cities?**

We believe that smart city applications and infrastructure will proliferate over the coming years. The focus on decarbonisation and reducing energy consumption in the US will drive multiple projects.

We expect the range of smart city applications to evolve and increase, which will lead to new opportunities to decarbonise and save energy. Additionally, we think the underlying smart city applications themselves will become even more efficient and advanced. So, some projects that are not viable today will become possible in the future through engineering advances.

We are also confident that funding structures will advance and evolve. For example, we are building a state-of-the-art water treatment facility for the city of Fort Lauderdale, Florida, under a 30-year availability-based contract. The funding structure is a first-of-its kind, whereby Fort Lauderdale benefits from lower cost financing, which limits the impact of rates on the community. ■