



Thinking Big

Exploring New Relationships & Asset Uses: Benefits & Risks

Introducing SSE Enterprise





SSEN Distribution

Enterprise





Energy Customer Solutions

Energy Portfolio Management and Investments

Thermal

Energy

Our vision

To be a leading energy provider in a low carbon world

Our purpose

Provide energy needed today and strive for a better world of energy for tomorrow

Our strategy

To create value for shareholders and society from developing, owning and operating energy and related infrastructure and services in a sustainable way





Real World Experience

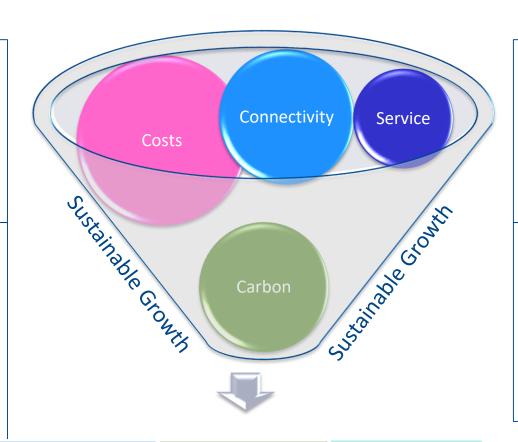


Technology Changes

- Smart Grid, local balancing, DNO to DSO
- EV and autonomous vehicles
- Open access
- Emerging NB IoT and 5G
- Advanced sensor technology
- Cloud and edge
- ML & Al

Social

- Air quality issue awareness
- Growing EV acceptance
- Exponential information appetite
- Desire much faster information access
- Growing and aging population
- Fuel poverty
- Seeking better VFM
- More/better/Joined up services
- Ease and safety of movement



Political/Regulatory Changes

- Carbon reduction
- No new build gas boilers (2025)
- Low emission zones
- Diesel/petrol car bans
- Drive for EV infrastructure
- Drive for ubiquitous high bandwidth

Economic Changes

- Increasing cost of social care
- Rising energy and carbon costs
- Local Authority funding cuts
- Cost reduction in technologies: LEDs, sensors, EV cars, etc
- Consumers have less disposable income

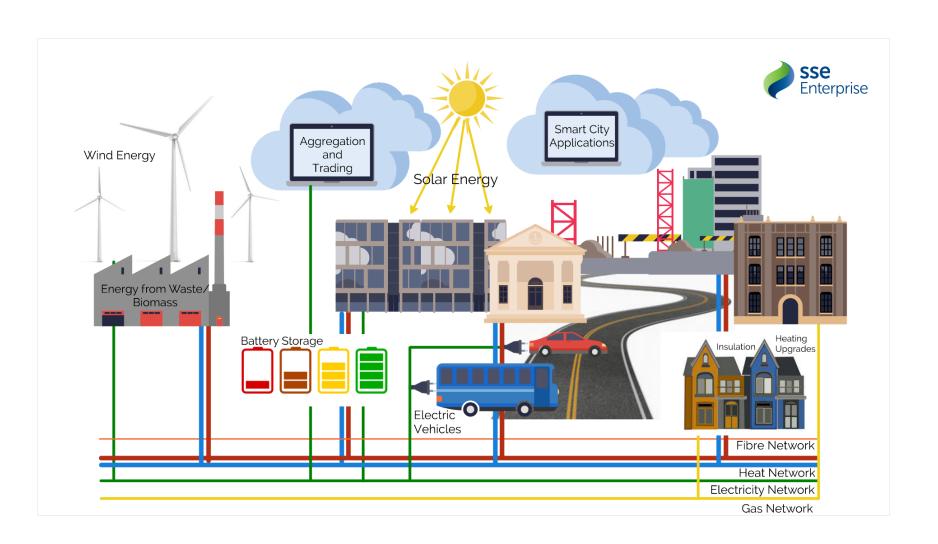
Connectivity Led Smart City Smart Places

e.g. Manchester e.g. Bristol Smart Places

e.g. WMT

A Smart Cities & Places Vision





Management

Visibility

Connectivity

Assets

Infrastructure

Vision vs Reality



The Vision

- Integrated city service
- Multi-modal / joined up transport
- Multi-channel direct service access
- Energy Snooth Aga d print ation
- Smart enablement & control of assets
- Service intelligence and automation

 More frequence readily, Cashy informed citizen

The Reality

- : Siand one L'oprocurement —
- · Breaking downers of order
- Standahofre EV thretore, nvehich needs...
- Stam dan dieersta enging rotu heenfein an cial
- Sbærdefitseofineirtecity probindeing nt



SSE's Approach to Smart Cities



SSEE's strength and focus is on the following asset classes











ting EVs

Comms

Using 'As a Service' propositions that provide cities with solutions they need at a cost they can afford

Features

Detailed domain knowledge

Understand and invest in risk

Transition Client Capex to Opex

Components

Services

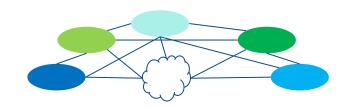
Platforms & Communications

Assets

Infrastructure

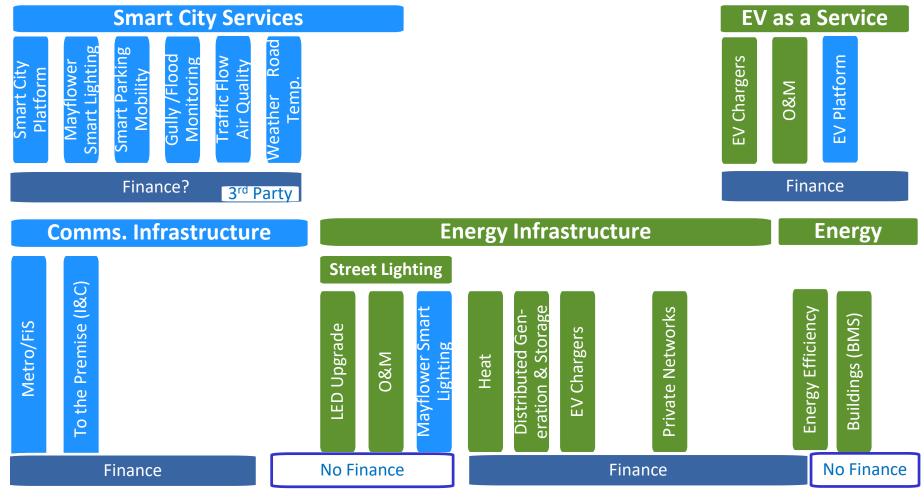
Commercialising smart city delivery across silos

Joined up thinking to deliver smart city benefits



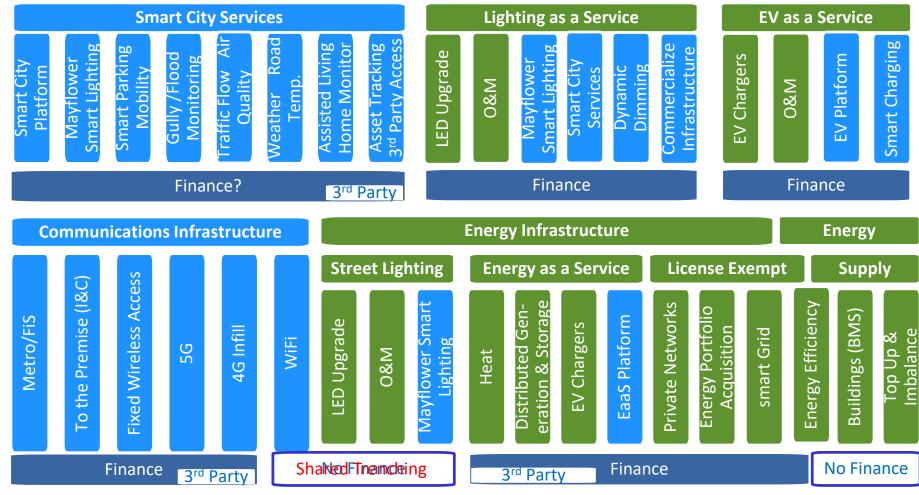
Siloed Procurement





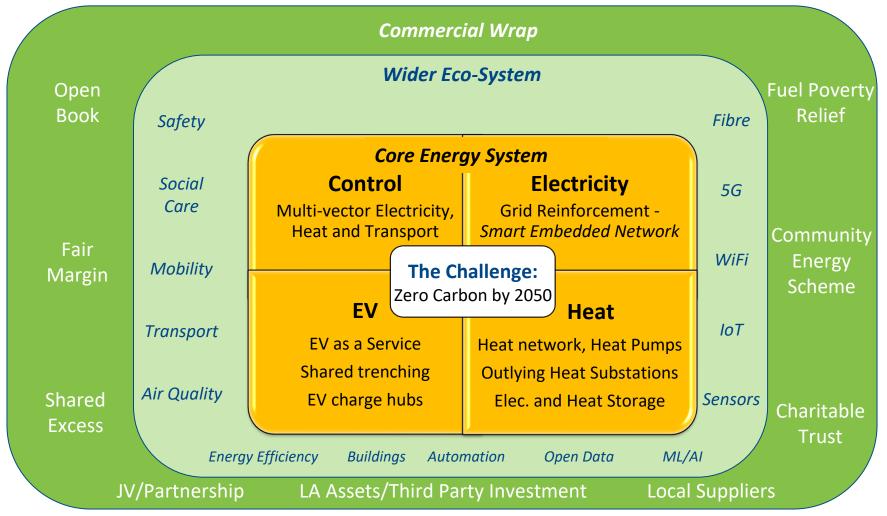
Joined-Up Thinking





Bringing It Together...

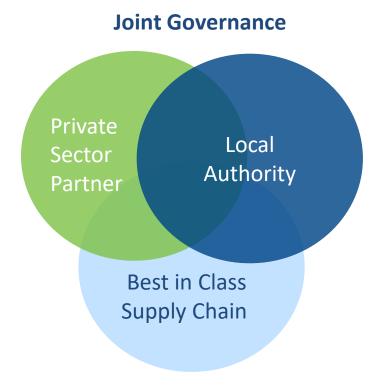




Delivering Big: Value Exchange



Project Delivery
Platform Services
Asset Management
Operation & Maintenance



Specialist Skills and Services, Local Suppliers, Community Schemes, Investors, etc.

Brand Strength
Service Delivery
Planning Expertise
Infrastructure Assets
Heat and electricity loads
Policy/Masterplan Alignment

Challenges



- Including everything... not bits.
 - Energy, EV, heat, facilities.
- Historical local authority procurement models.
 - Encourage siloed thinking and impede strategic change.
- Designing and implementing equitable "Value Exchange" schemes.
 - Accepting the principles of mutuality.
- True partnership working.
 - Creating a cost, risk, reward tradespace.

Research Explorations

Testing Concepts, Benefits, Costs & Risks



Suffolk

- Smart City IoT in hand with existing project.
- Solar to load (beyond highways, own or others).
- Solar to EV charge hub.

Oxfordshire

- Solar to load/EV charge hub.
- EV integrated transport planning for early EV commercialisation.

- Derbyshire

- Smart lighting/IoT solutions.
- Solar to load.

- Huddersfield

- Smart Energy / Heat Network System Around EfW.
- Solar to load.

- Consistent Issues & Requirements

- Significant opportunities being explored as part of the research exercise.

Benefits & Dis-Benefits Example



Value **Exchange**

Energy for Land + Guaranteed Custom (Private Wire) Benefit

Offsetting total cost of streetlighting and assets illumination.

Benefit

Low cost of investment. Working with specialists minimises the risks.

Dis-Benefit

Authority is tied to single partner for the length of the concession / contract.

Research Context



