

Real Energy Reduction Retrofit



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The Big Picture, Buildings, Services and Maintenance



Interserve Energy Management



Interserve Integrated Energy Services Offer:



- **Energy supply** - advising Clients on fuel selection, wholesale energy procurement & supply, bill validation
- **Data management** - gathering consumption data, analysis, reporting, monitoring and targeting
- **Behavioural Change** - helping Clients to reduce energy consumption through good operating practices,
- **Compliance** - supporting Clients to comply with legislation through certification and reporting
- **Operations and maintenance** - optimise energy performance on sites through our Facilities Management activities on Client sites
- **Technology retrofit** - identification, design, installation and guaranteed performance from application of new technologies on Client sites
- **Generation** - supply of energy generated on customer sites from CHP, Renewable's and energy efficient equipment
- **Investment** - bringing financial resources to all of the above to make them a reality

The Energy Developments Approach



It costs the client no money, funded via grants, energy & carbon savings

Local job creation, curriculum learning & client reputation improved

Work is generated for Interserve Group companies

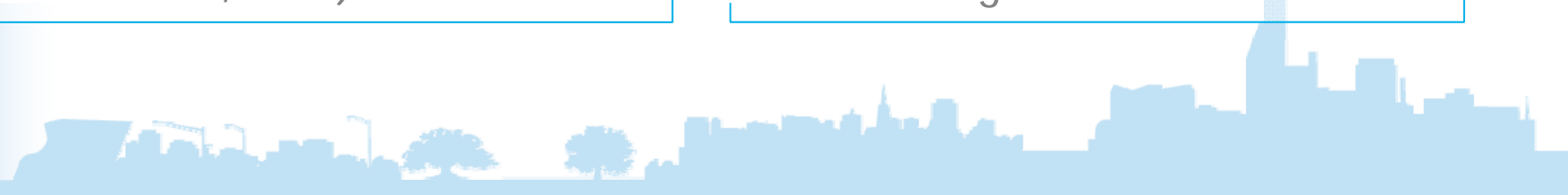
Long-term contracts developed with closer client relationships



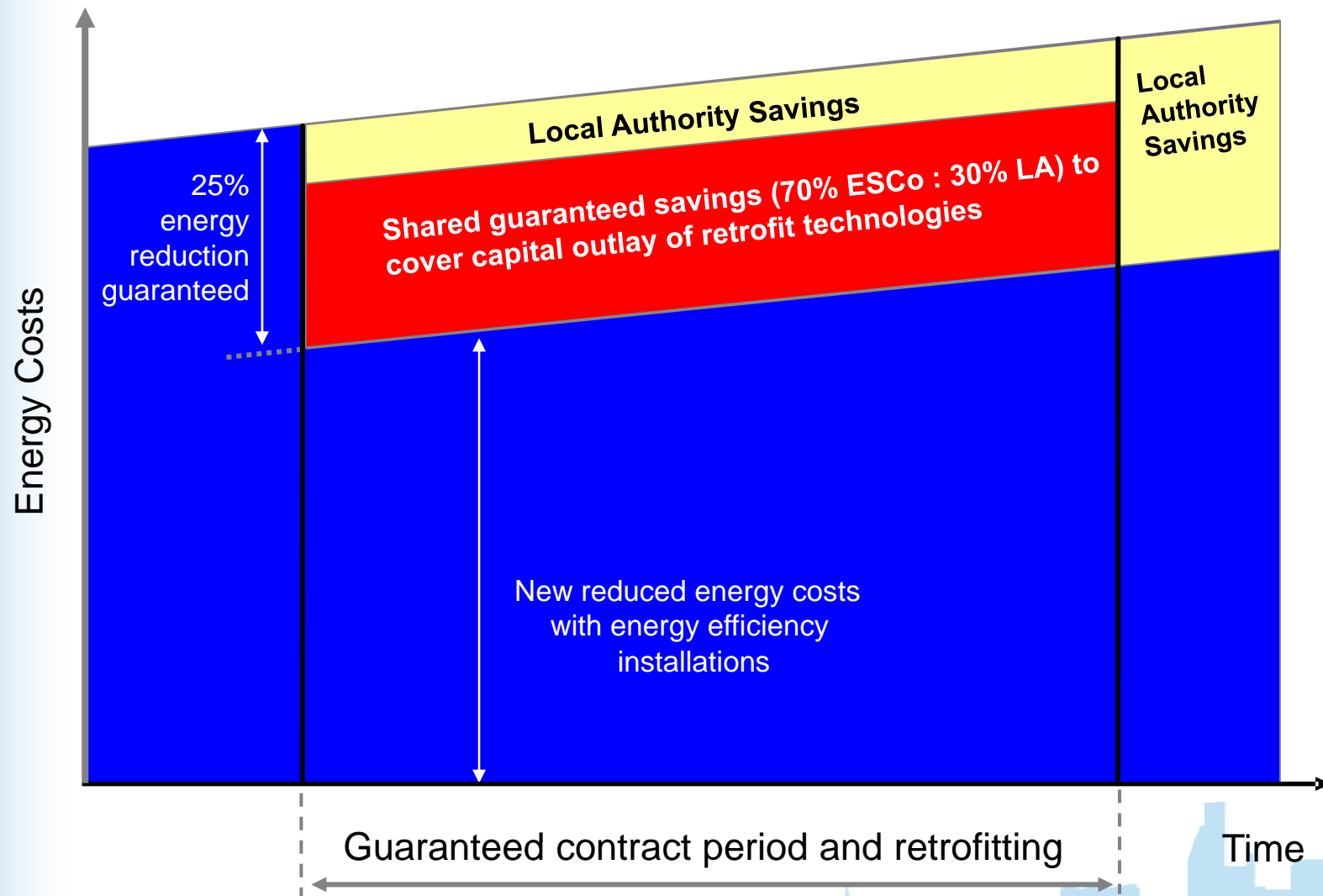
Retrofit - energy reduction measures in buildings (services, fabric, etc.)



Renewables - lower cost energy through solar, wind, AD, CHP, and on-site generation etc.



Spend-to-Save: energy retrofit returns



Building Energy Reduction 10% to 20%



Behavioural Change

draught proofing

Boiler plant efficiency

Variable speed drives

Voltage optimisation

Wall insulation

Energy efficient lighting

Improve pipe insulation

air tightness

Improve chillers efficiency

Improve lighting controls

Roof insulation

Glazing

ICT

Improve heating controls

BMS optimisation





Building Energy Reduction 20% to 50%

Re-size HVAC plant

RETRO - COMMISSIONING

Passive Thermal Mass

Passive Solar

External Wall insulation

External Blinds

Solar Thermal DHWS

Passive Stack Ventilation

Active Thermal Mass

Micro zone HVAC Controls

Behavioural Change 2 Waste Heat Heat Pumps



Building Carbon Reduction 50% to 80%



**Super
Insulation**

Remove all inefficient
plant

Carbon Neutral Heating
and Cooling

Integrate Renewables into the
building fabric

No Solar Gains
No Heat Loss

Passive stack ventilation with
integral heat recovery systems

Behavioural
Change 3

Redesign the physics
of the building



Energy Reduction Points

1. Measures have to satisfy the golden rule
 - Real energy savings, that will pay for themselves within the contractual timeframe and benchmarking has to be agreed prior to the works.
2. Behavioural change is continuous process, at all levels and is about listening and not just informing
 - You need to understand why people use energy, not just the what and when of energy consumption
3. Higher energy reductions require improved thermal efficiency and the utilisation of thermal mass
 - The energy market is in flux and the cost of energy is uncertain, energy retrofit reduces these risks.
 - Higher energy reductions require higher skill levels and a fresh look at the design of the building and its current use.
4. It should be EASY to be green
 - The paradigm that it is more difficult to be green inhibits the growth the energy reduction and ignores improvements in indoor comfort
5. Energy policies have to fully integrate with one another
 - Energy reduction and on site generation go hand-in-hand

