



## Castleview Low Carbon Hub



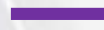

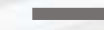



# OVERVIEW

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# BACKGROUND

## OPPORTUNITY IDENTIFIED TO INTEGRATE SUSTAINABLE ENERGY AND SUSTAINABLE TRANSPORT USING EXISTING ASSETS AND GENERATING RENEWABLE ENERGY TO MEET LOCAL DEMAND

- solar canopies have the potential to transform car parks into “energy hubs”: **generating low cost, renewable electricity** to meet local energy demand for buildings, streetlighting and electric vehicle charging
- extensive car parking across Council estates, **urban and rural = optimising existing assets** and meeting increase in electrical demand from EVs using renewable energy
- Castleview Park & Ride: 
  - proximity to **national road network** and **cycle networks**    
  - large **employment and educational** sites
  - **functional journeys:** City Centre 1.8 miles   
train and bus station 1.5 miles 
  - **tourist attractions:** Stirling Castle 1.3 miles 



# FUNDING OVERVIEW

A PROJECT WAS DEVELOPED WHICH INTEGRATED SOLAR CANOPIES WITH BATTERY STORAGE AND EV CHARGING:  
OPPORTUNITY IDENTIFIED FOR LCTT FUNDING

- **Low Carbon Travel and Transport Challenge Fund (LCTT)** - capital funding call to further sustainable and greener travel options. Aligns with Scotland's commitment to end our contribution to climate change within a generation
- **ERDF and Scottish Government** support which provides up to 70% total project capex
- **Match funding** secured by Stirling Council
- Initially **30<sup>th</sup> November 2020** deadline due to EU funding



# PROJECT OVERVIEW

CASTLEVIEW CHOSEN DUE TO ITS PROXIMITY TO NATIONAL ROAD NETWORK & ELECTRIC A9. MAIN AIM IS TO PROVIDE COMMUTERS, RESIDENTS AND VISITORS INCREASED OPPORTUNITIES FOR ACTIVE AND LOW CARBON TRAVEL



- **solar canopies:** covering 132 spaces (1,400m<sup>2</sup>); estimated generate ~200,000kWh annually
- **battery storage:** storage capacity 352kWh (30% of daily peak renewable energy generated)
- **EV chargers:** 64 additional charger points powered by renewable energy
  - 6 x rapid (43/50kW) charger points
  - 18 x fast (22kW) charger points
  - 40 x slow (7kW ) charger points
- **inclusive:** EV charging bays designated specifically for blue badge holders
- **safe crossing and improved path links:** from the site to connect to employment and education sites as well as enabling safe active travel into City Centre



# CHALLENGES & RISKS TO THE PROJECT

STEEP LEARNING CURVE – THERE WERE A NUMBER OF CHALLENGES AND KEY AREAS FOR CONSIDERATION WITHIN THE PROJECT

LARGE  
CAPITAL  
OUTLAY

PROCUREMENT

COVID-19

PLANNING &  
BUILDING  
WARRANT

TIMESCALES

FEAR OF THE  
UNKNOWN

FINANCE

STAKEHOLDER  
ENGAGEMENT



# Castleview Low Carbon Hub: Benefits



Analysis carried out to identify local financial & environmental benefits resulting from project



## Investing in infrastructure that brings direct benefits to end users:

- **Increased Energy Efficiency:** Energy demand derived from EV charging is met primarily by locally generated sustainable energy, increasing resilience
- **More Sustainable Transport Options:** With the option to charge an EV, hire a Nextbike, use the Park & Ride bus or walk using the new pedestrian crossing, the Park & Choose site reduces city centre traffic and emissions.



## Local & National Opportunities:

- **Scalable & Replicable:** Across the Council area and Scotland to help EV uptake and transport decarbonisation
- **Job creation/upskilling of local workforce:** Low carbon and renewables – a growing industry which Scotland has world leading targets in



## Local Area Enhancement:

- **Economic development and regeneration of areas:** Raploch and Castleview Business Park will benefit heavily from this project, as will commuters and students
- **Income generation:** Investment in future projects and/or community projects

# Opportunities & Impacts



Decarbonisation of both Energy and Transport are key aspects of the climate emergency, and both of which are positively impacted by this project. Other areas of specific impacts from the project include:



## Energy Saving Technologies

- ❖ Energy provided from **decarbonised solution** instead of grid electricity or fuel for vehicles.



## Resource Efficiency

- ❖ Over **165 MWh** of renewable energy supplied to the site.



## CO<sub>2</sub> Reduction

- ❖ **19.2 tCO<sub>2</sub>** reduction between July and December 2021.



## Income Generation

- ❖ **Creating an asset** that has a long life and can be extended and maximised
- ❖ **Money reinvested** back into more renewables



# POST CONSTRUCTION

Below are the number of charging sessions that drew >1kWh, in order to remove failed charges, and the total energy usage for the first years of operation.

## April 2020-March 2021 (peak lockdown)

Charging Sessions = 2,245

Total Energy Usage = 36,195 kWh

## April 2021 – December 2021

Charging Sessions = 7,407 (↑ 69.7%)

Total Energy Usage = 216,615 kWh (↑ 83.3%)

## NEXT STEPS

Car park usage predicted to increase in 2022 as office working returns, particularly to Castlevue Business Park and the college. Commuters from the motorway and A9 are also expected to use this site.

Potential improvements to the existing Castlevue Low Carbon Hub based on stats, particularly once usage increases e.g.

- More battery storage
- Increased number of particular chargers
- Potential capacity marketing
- EV busses for P&R

Replication across Stirling and Scotland with lessons learned taken into consideration.

- Currently planning a similar project for the car park of The Peak Sports Centre in Stirling.



Thank You

