

Confidential

# Secure and sustainable electricity, heat, cooling and hydrogen for La Plata region

**imaginatives**  
THOUGHTFUL FUTURES





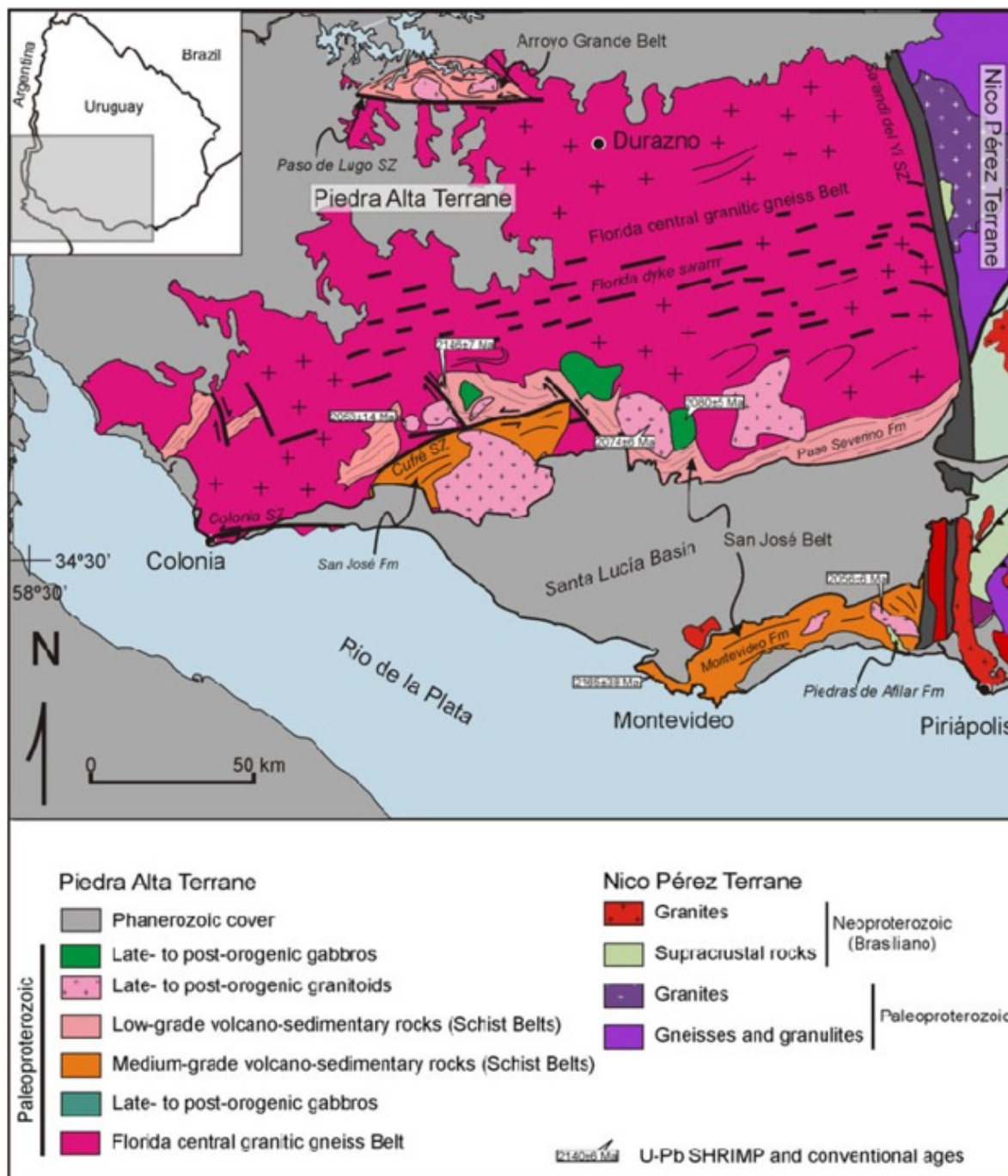


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THOUGHTFUL FUTURES

Puerto Ibicuy  
Col. Delta  
Brazo Largo  
Agraciada  
Nueva Palmira  
Zagarzazú  
Carmelo  
Ombues de Lavalle  
Conchillas  
Colonia Miguelete  
Lima  
Zarate  
Campaná  
Capilla del Señor  
Pilar  
Luján  
Moreno  
Morón  
Buenos Aires  
Quilmes  
Lomas de Zamora  
Berisso  
La Plata  
General Las Heras  
Cañuelas  
Uribe Larrea  
General Mansilla  
Magdalena, Buenos Aires  
Cardona  
Mal Abrigo  
González  
Nueva Helvecia  
Rosario  
Ecilda Paullier  
Juan Lacaze  
Fomento  
Artilleros  
San Pedro  
Taráiras  
Colonia del Sacramento

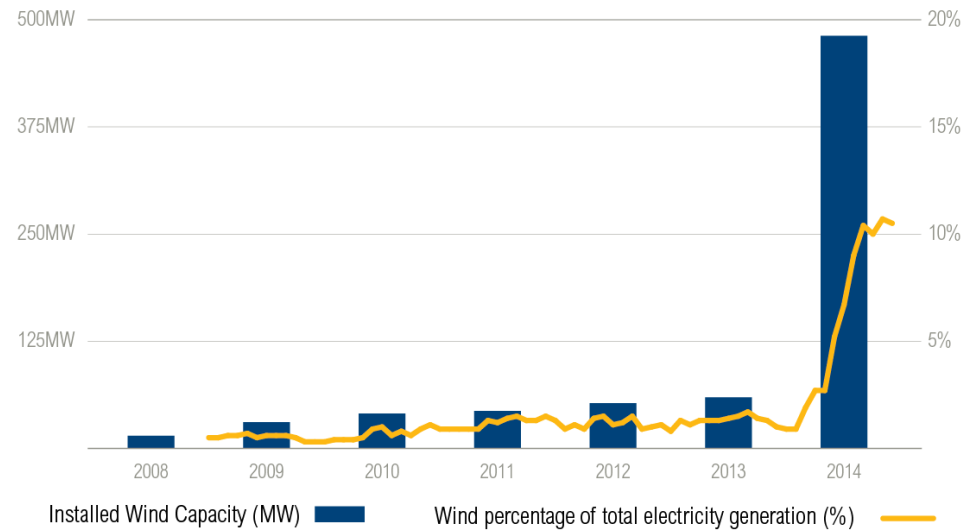


The Piedra Alta Terrane of Uruguay has extensive rocks which are ideal for energy storage



Uruguay already has solar and wind infrastructure which can be used as primary energy sources. It also has deep geothermal opportunities.

## Uruguay's Wind Power Growth, 2006–2014



Source: MIEM. 2015. "Statistics." Montevideo, Uruguay: Ministerio de Industria, Energía Y Minería, Republic of Uruguay.

[www.wri.org/publication/transformational-climate-finance](http://www.wri.org/publication/transformational-climate-finance)

 WORLD RESOURCES INSTITUTE



El Naranjal 109 GWh/a 59 MW

# Heat Vault STORING ENERGY.NATURALLY

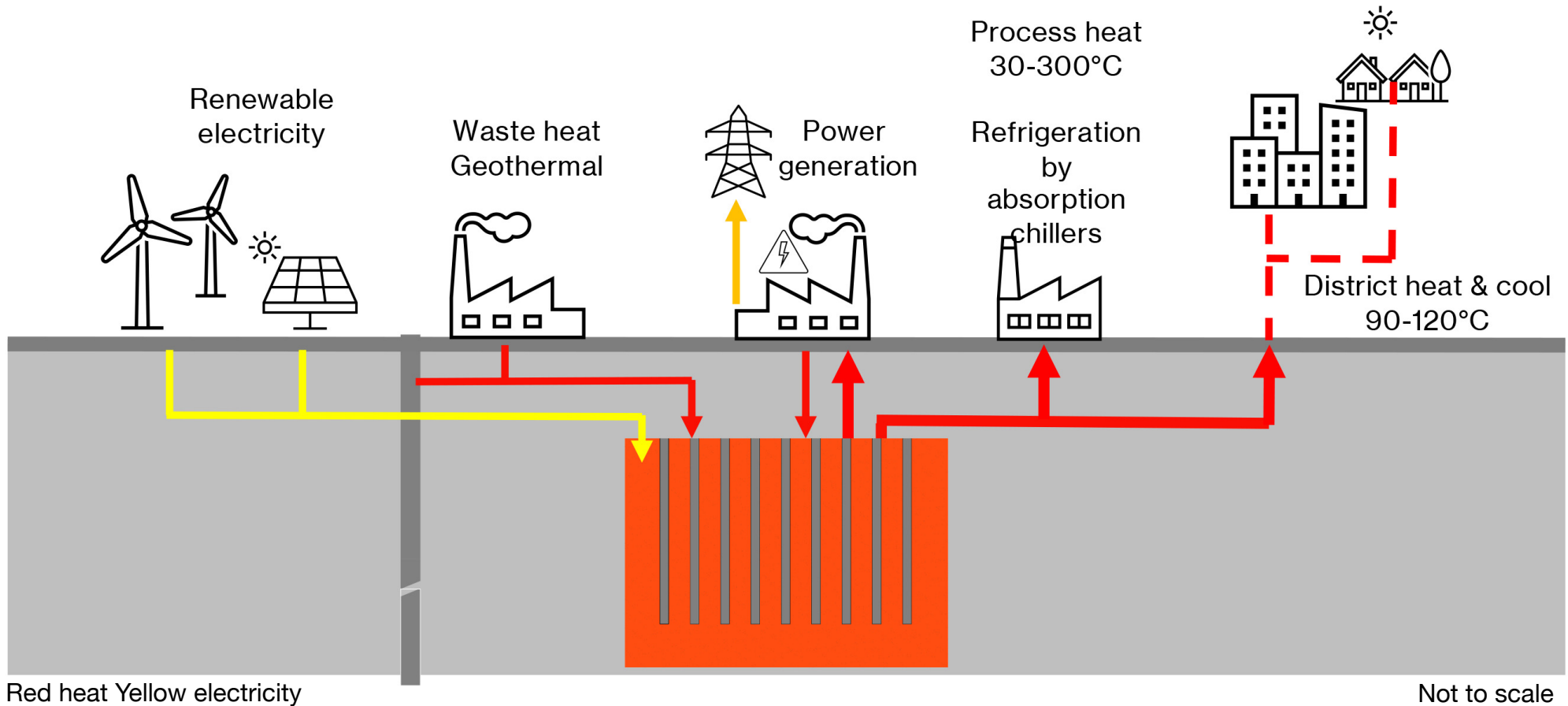
## HEAT ↔ ELECTRICITY ↔ HYDROGEN

- Ultra-Long Duration, Utility scale underground energy store within naturally occurring rocks in the form of heat
- Architecture of multiple deep boreholes some to input heat others to extract it
- Input of energy from waste heat from facilities and waste or excess electricity from grid
- Collects energy in off-peak and seasons with low energy demand at low cost
- Stores energy for weeks, months, years or decades
- Output of energy at peak and seasons with high energy demand at acceptable price, decoupled from global hydrocarbon price volatility
- Output can be as heat, cooling, electricity or green hydrogen
- Serves large infrastructure markets at GWh and TWh capacities

SOLVES RENEWABLES INTERMITTENCY | ELIMINATES CURTAILMENT | REMOVES NUCLEAR HEAT EXCESS | IMPROVES SOLAR EFFICIENCY | RECYCLES AND AUGMENTS INDUSTRIAL HEAT | DECARBONISES HEAT NETWORKS | ENHANCES GEOTHERMAL ENERGY USE | ACCELERATES RENEWABLES ADOPTION | REPURPOSES POWER UTILITY ASSETS  
**STORES VAST ENERGY FOR DECADES**

# Heat Vault

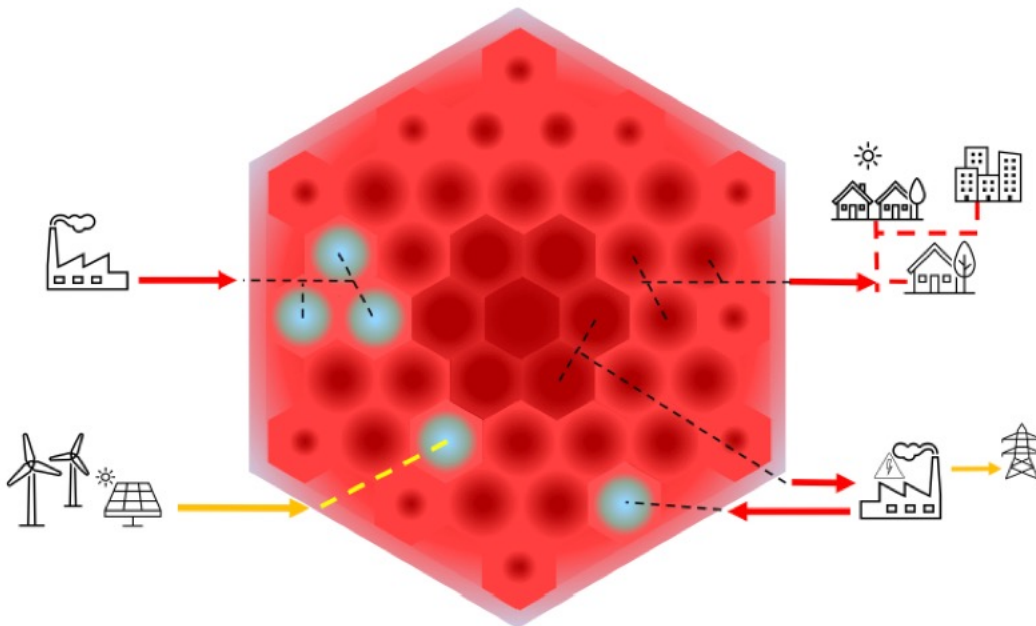
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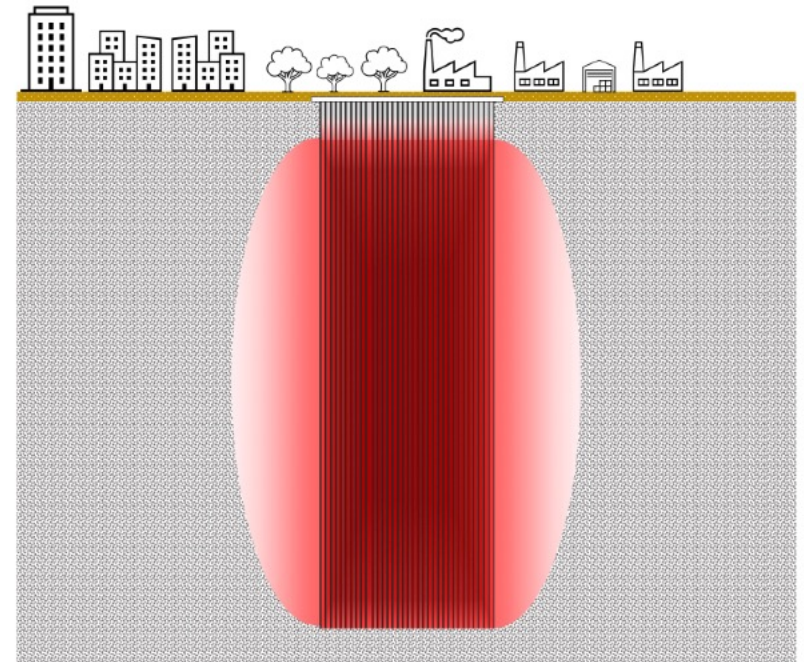


# Heat Vault

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Multisource energy input and simultaneous output



Roughly to scale





Colonia

**Buenos Aires' entire annual energy consumption of ~34TWh plus Montevideo's 345 GWh could be stored in a volume of natural rock of 0.08 km<sup>3</sup> (430 m X 430 m X430 m) heated to 600 degrees Celsius, saved for days or decades, costing less than \$3 billion to build**



# Delta & Plata

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