

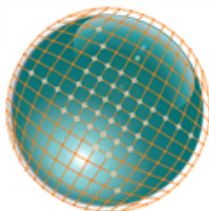
# Queensland Australia Smart Grid Trials

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4<sup>th</sup> International Conference on  
**Integration of  
Renewable and Distributed  
Energy Resources**

December 6-10, 2010  
Albuquerque, NM, USA

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# Overview

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- Queensland Trials Overview
- Queensland – Ergon Energy and Energex Trial  
Joint \$100M Trial
- Smart Asset Management Approach to  
Integrating DER Renewables and ‘Smart Grid’

# Summary of the Queensland Position on Smart Grid Trials

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- Ergon Energy and ENERGEN have agreed to undertake joint Smart Grid trials.
- Together, have many drivers for research and development of Smart Grid capability for the Queensland distribution networks e.g.
  - Reliability
  - Customer choice
  - Population growth
  - Demand growth
  - Distributed Energy Resources (DER) – PV, Storage, EVs
  - Capital constraints
  - Energy efficiency goals

# Queensland Smart Grid Trials Key Principles

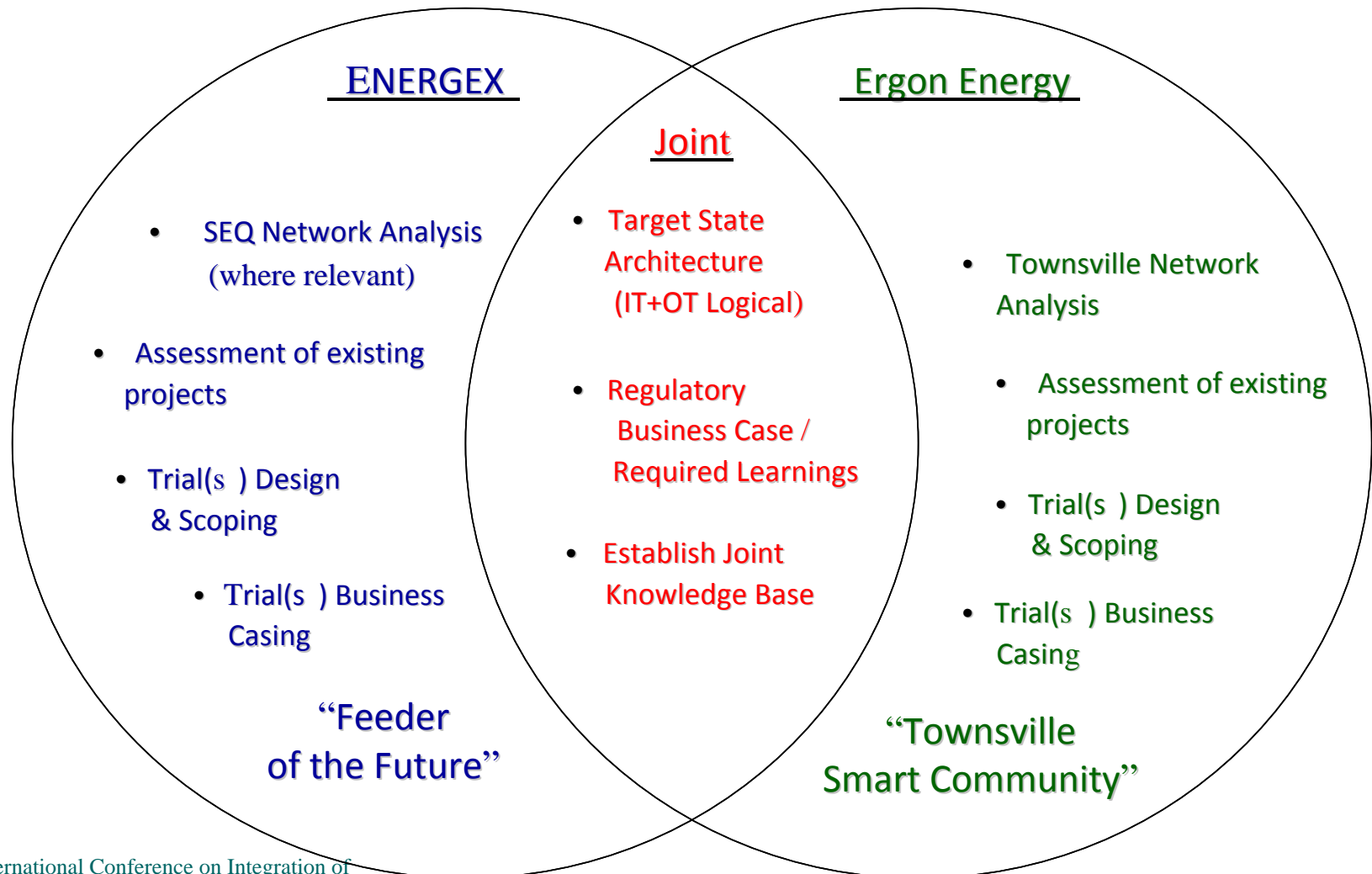
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Key principles for investment in Qld Smart Grid trials are:

1. We should acquire the knowledge and learnings from others where applicable to Queensland.
2. Prior to large scale trials, we should consider alternatives, such as modelling and simulations.
3. When we do undertake large trials, these should be shared between Ergon Energy and ENERGEX where useful.

# Queensland Distribution Collaboration

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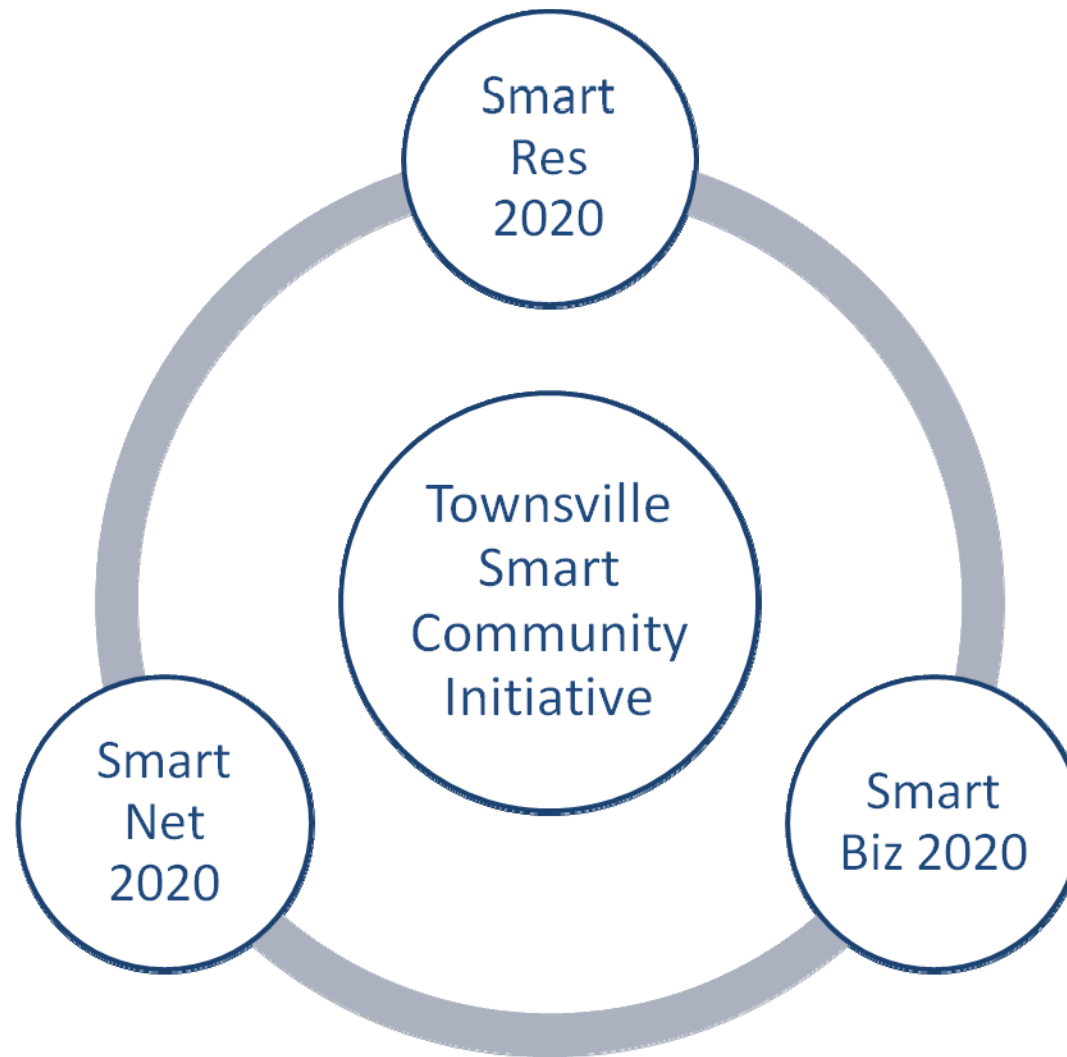
# ENERGEX 'Feeder of the Future'

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- Newmarket Zone Substation – 7 by 11 kV Feeders
- Sensors and monitoring
- Volt VAR Management – centralised & decentralised trial (DMS)
- FDIR – Reliability
- DER
  - Storage trials University of Queensland CSIRO
  - Embedded in network
  - Control of smart inverters
- AFLC transition Options
  - Analysis & Trials
- Protection
  - Application IEC 61850
  - 2 way energy flow

# Ergon Energy

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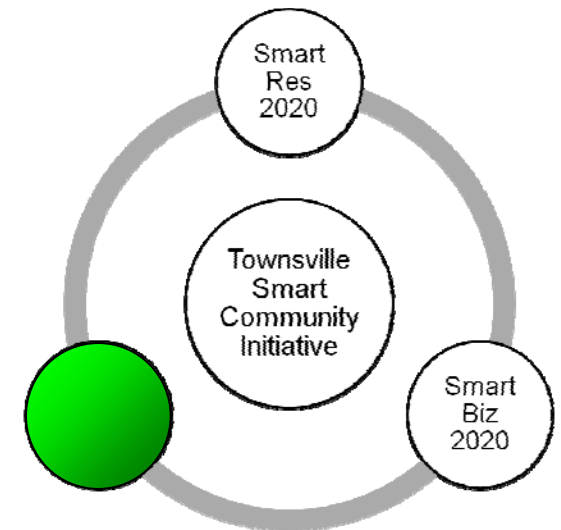


# Smart Net 2020

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## Vision

- Establishing a model of the most efficient Ergon Energy network aimed for deliver by 2020
- This network<sup>1</sup>:
  - Optimises assets and operates efficiently;
  - Is resilient and robust;
  - Provides power quality for modern needs;
  - Empowers the customer;
  - Accommodates distributed energy resources;
  - Is self healing;
  - Enables participation in markets: and
  - Incorporates environmental sustainability.



# Ergon Energy Approach

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- Smart Asset Management
- Overlaying the demand curve and supply curve and optimising the solution through creation of a 'blend' of traditional and alternative elements
- **Focus on value**
- Structured exploration process – Preliminary Exploration Model ( SGP Tool)
- Includes reframing of traditional planning solution
- **'Smart grid' , DER, and distribution poles and wires compete to be part of the blend**
- Blend

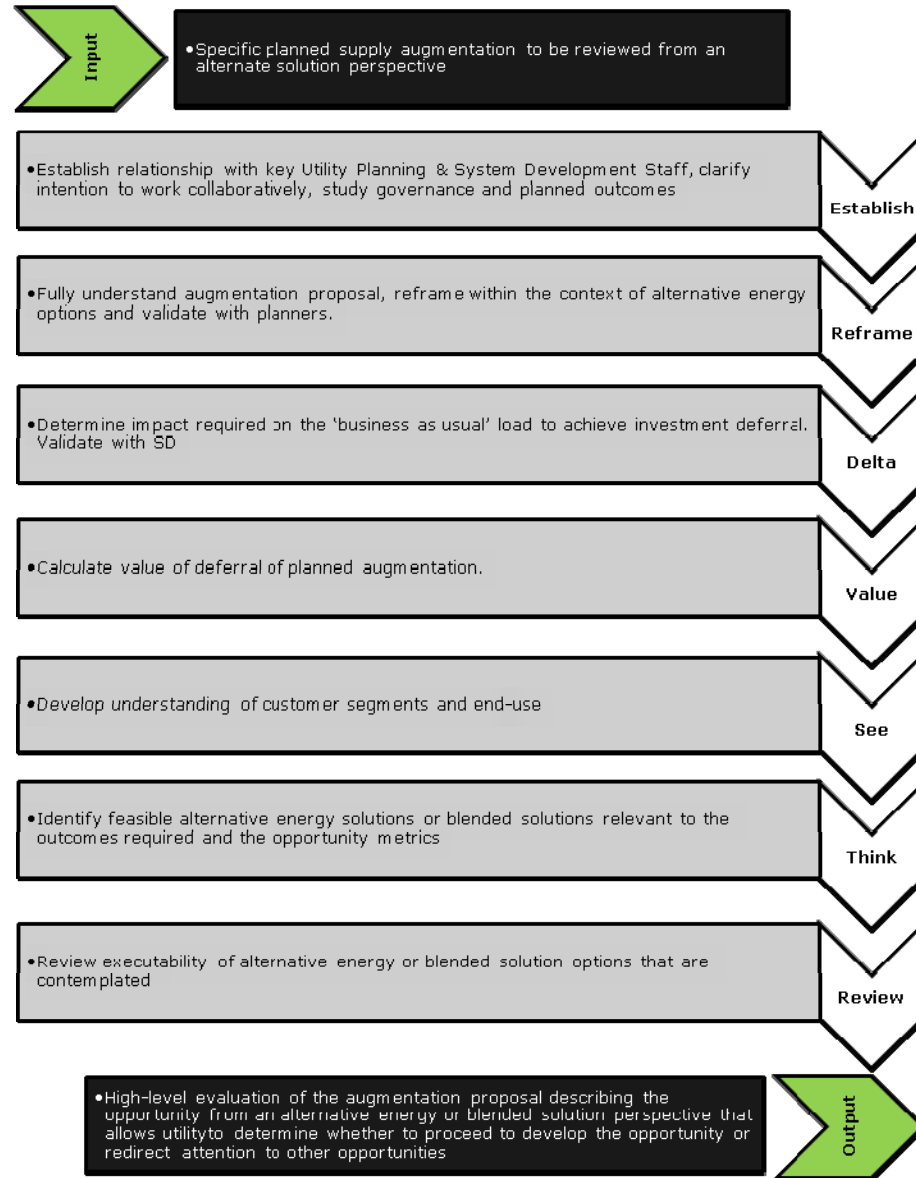
# SGP – Preliminary Exploration Model

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## Preliminary Exploration Model (PEM)®



## Suitability Of A Planned Network Supply Augmentation For Demand and Non-Traditional Solution Alternatives



# Smart Biz 2020

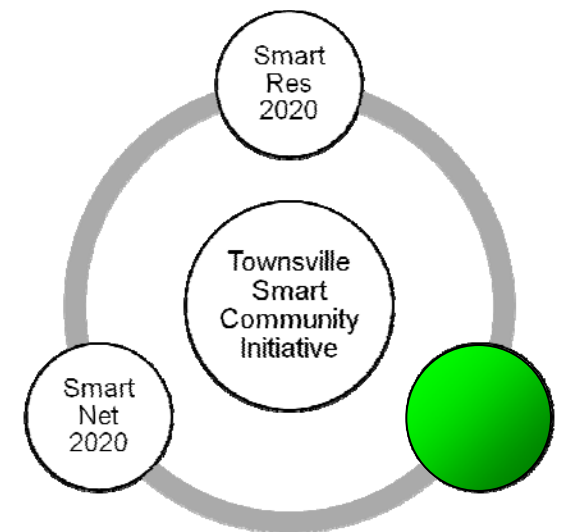
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## Vision

- Establishing a model of the C&I networks as Ergon expects them to be in 2020
- Creating a sustainably funded model for joint distributor–customer value by focussing on demand and energy reduction

## Existing Building Blocks

- Leverage the experiences of the existing Network Demand Management (NDM) Pilot
- Methodologies developed by Alternative Energy Solutions (AES) for deferral opportunity identification
- Leveraging the Townsville City Council’s business clusters
- Customer Service strategies for enhancing C&I customer channel interaction



# Smart Res 2020

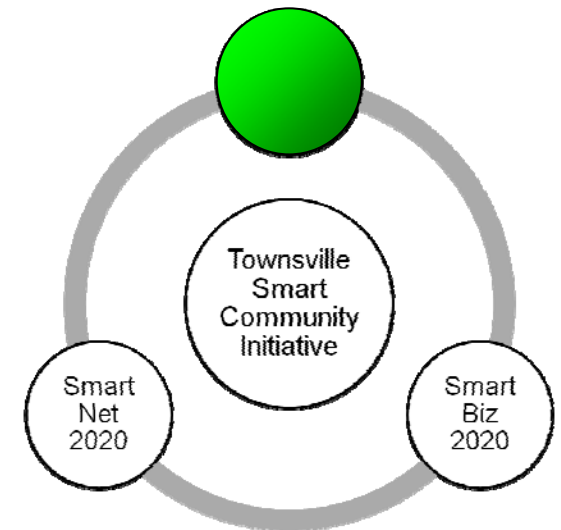
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## Vision

- Establishing a model of the residential network as it is expected to be in 2020

## Existing Building Blocks

- Leveraging existing and planned Energy Conservation and Demand Management (ECDM) initiatives
- Knowledge created from Innovation Trials – EV, Grid Smart PV, Battery Storage
- Leverage NBN first release area and metering trial rollout
- Magnetic Island Solar Suburb experiences
- Townsville City Council's CitySolar Community Capacity Building Program using Thematic Communication, Collective Social Learning and Community Based Social Marketing
- City level interaction with Smart Grid Smart City Project in Newcastle



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# Questions Thanks