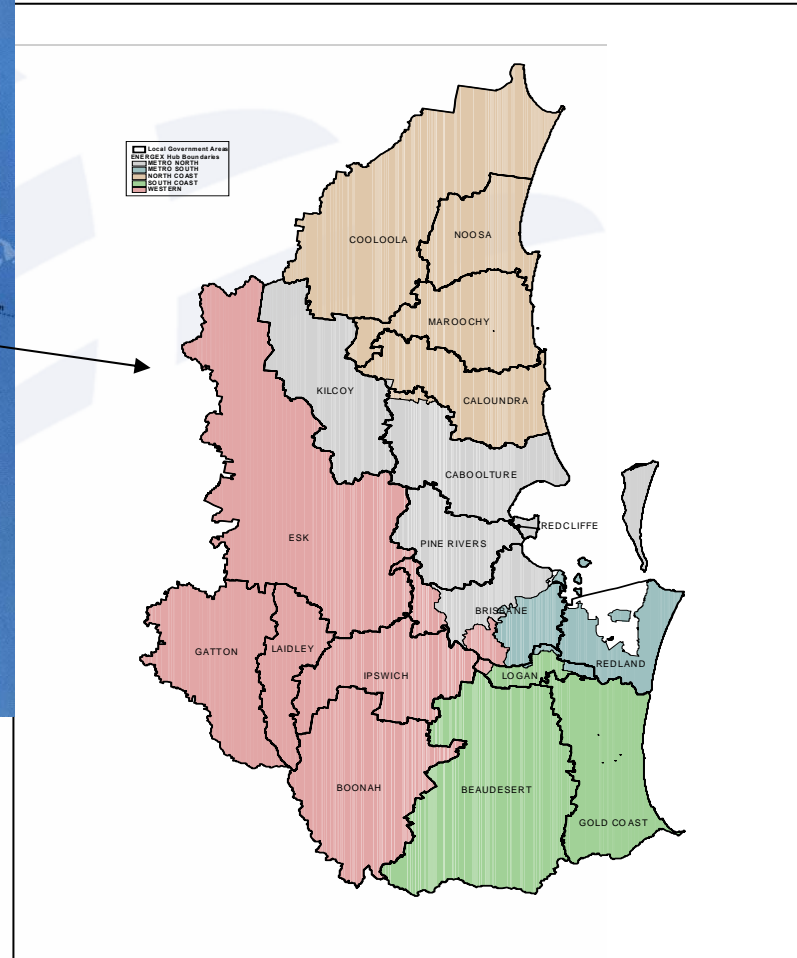
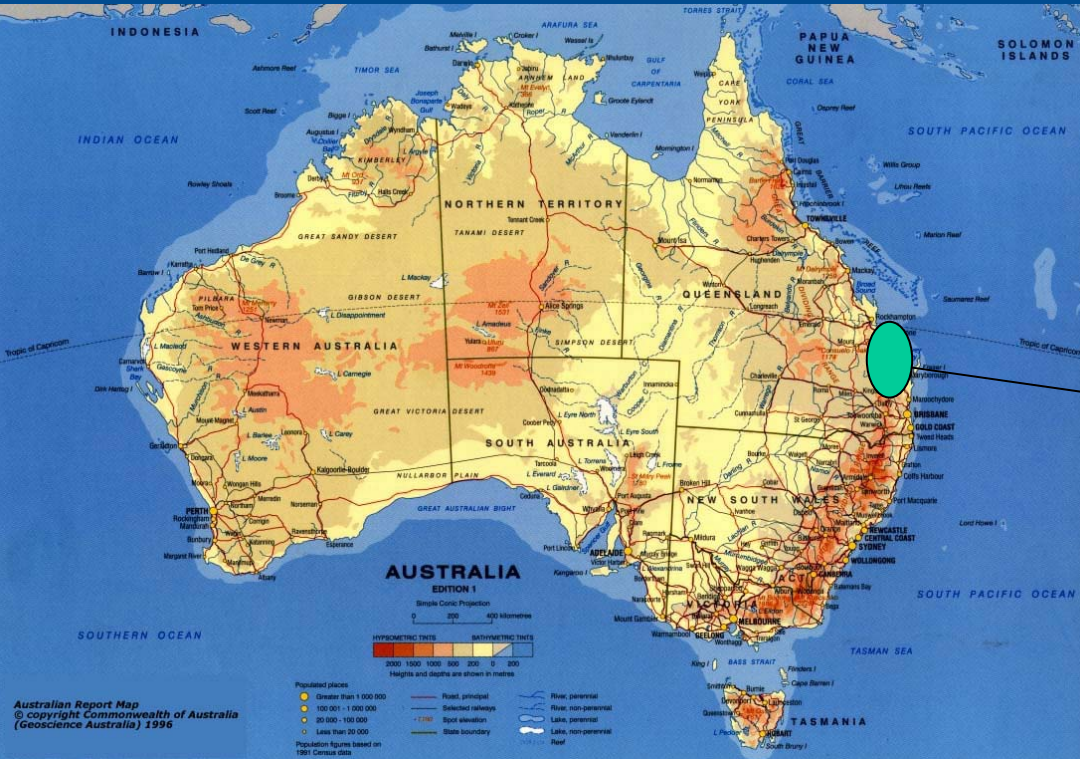
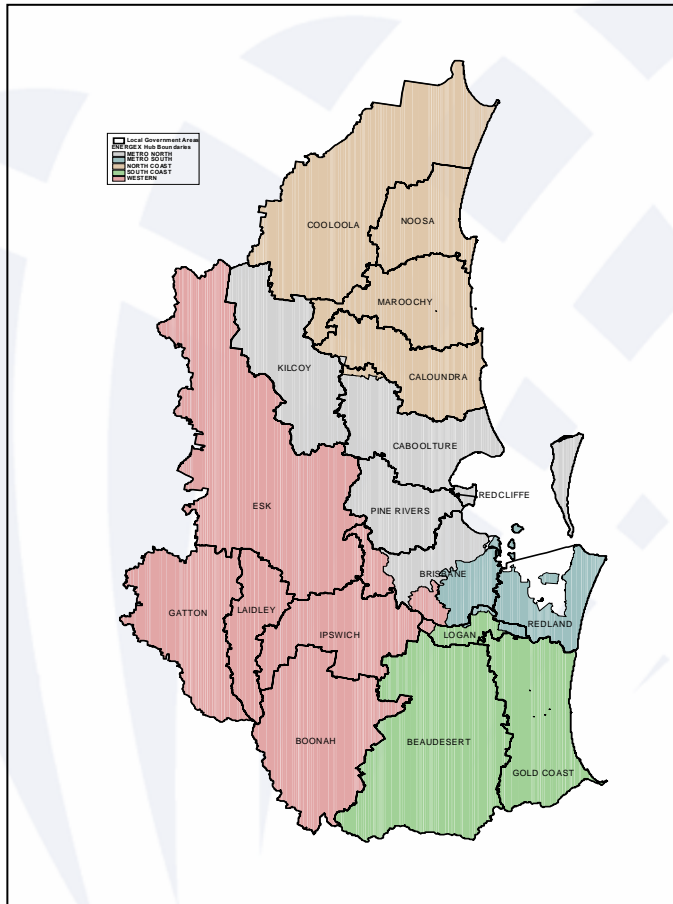


ENERGEX is located in South East Queensland





- **1.2m Customers**
- **25,000 km² Area**
- **47,000 km of lines and cables**
- **220 Substations**
- **39,000 Distribution Transformers**
- **250,000 Streetlights**
- **4200 MW Annual System Demand**
- **>\$3.0B capital program over 5 years**



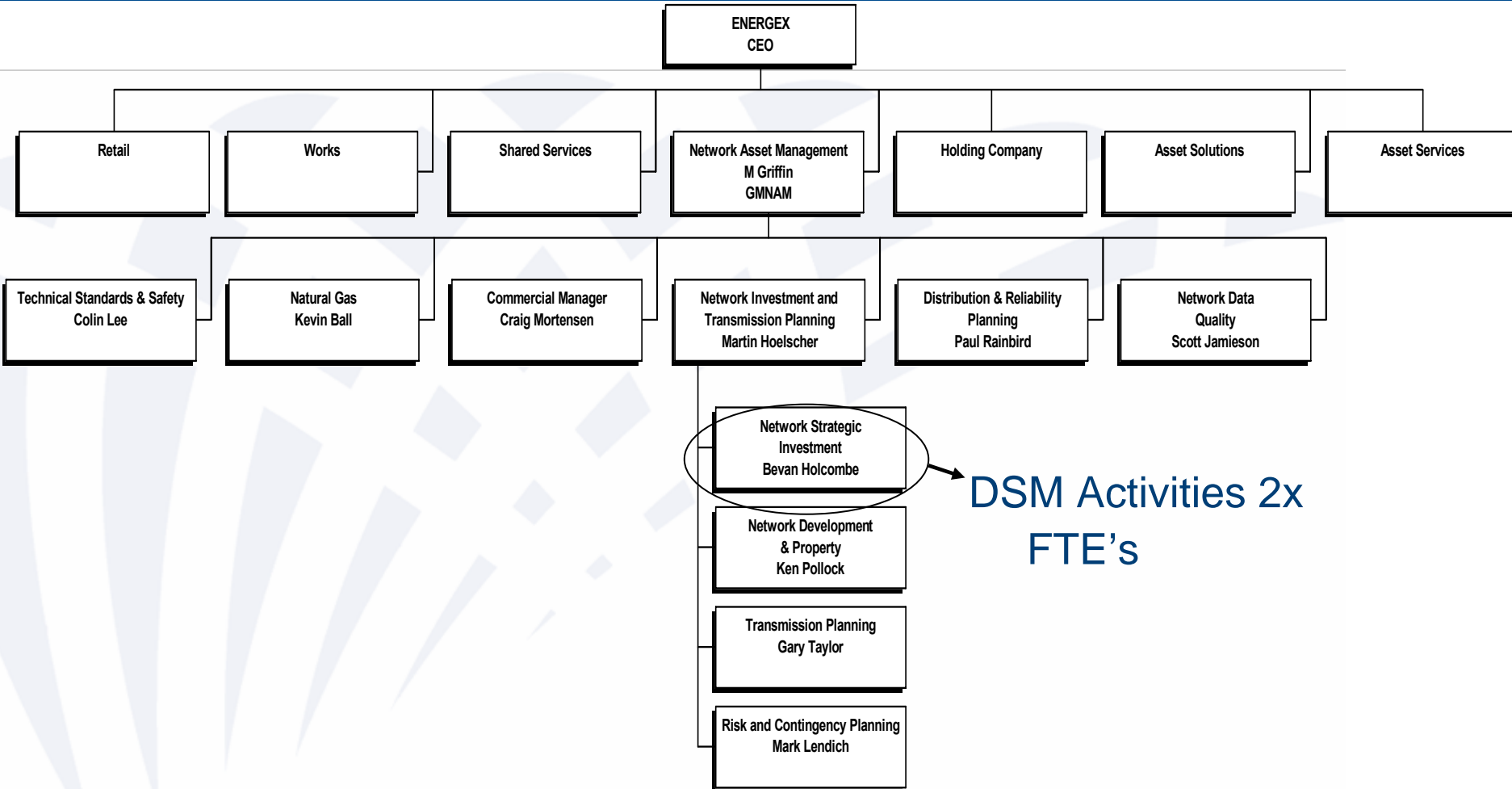
- **High growth in customers and population 3-4%**
- **High growth in electrical demand 9% average over the 3 years to summer 2004/05**
- **Sub tropical environment with areas of high rainfall and rapid vegetation growth**
- **Periods of sustained high temperatures and humidity**

Note: Lightning images have been used with the kind permission of Mr Gary Brooke.



- **Second highest lightning intensity of Australian Capital Cities**
- **Subjected to severe electrical storms with high speed damaging wind gusts**
- **Coastal environments with high levels of salt spray**

Note: Lightning images have been used with the kind permission of Mr Gary Brooke.



- **ENERGEX + Brisbane and Gold Coast City Councils**
 - Scoping study by CSIRO and SEDA
- **ENERGEX + Ergon + Powerlink**
 - A full understanding of the range of network DM programs, tools and technologies available to manage Network Demand
 - Detailed cost/benefit analysis on the range of practical alternatives
 - Creation of a satisfactory regulatory framework to support investment in network DM initiatives as approved regulatory expenditure
 - Develop effective marketing strategies

- Research and trials
 - End use studies
 - Customer profiling
 - Advanced metering
 - TOU tariffs
 - DLC
 - kV.A tariffs
 - Energy efficiency
 - Appliance control standards

**Air Conditioning
purchasing trends and
saturation**

Customer surveys

Interval meter trial

**Ecovillage
collaboration**

Smart meter / TOU trial

Demand response trial

kV.A tariff proposal

**Network DSM studies -
ieaDSM**

Estimation of the Value of Water Heating Control to ENERGEX Network

- Reviewed ENERGETX's hot water Audio Frequency Load Control (AFLC) capability which has been in place for over 30 years
- Estimated Winter and Summer impacts of load shifting
- Estimated value of benefit cost framework based on deferral of network capital investment

ASSUMPTIONS

- 500,000 T33 (18 hrs on per day) customers
- 200 Zone substations
- Avg. T33 DSM load / customer
 - Winter 0.70 kW
 - Summer 0.14 kW
- Demand growth 5.0% pa (summer)
- Demand growth 3.0% pa (winter)
- 200,000 T31 (9h on per day) customers
- Similar demand impact to T33
- Estimated Capacity cost \$1.25M / MVA deferred
- Discount rate 6.5% pa
- Term 25 years
- AFLC cost / substation \$200K
- AFLC relay / customer \$80

T33 DEFERRAL BENEFIT TO NETWORK

Representative Substation Load (% Normal Cyclical Load)	50%	75%	100%
Winter Peaking NPV	\$101M pa	\$71M pa	\$125M pa
Summer Peaking NPV	\$48M pa	\$46M pa	\$8M pa
Weighting in Network (estimated % of Subs at nominated Load)	25%	50%	25%
Winter Peaking Network NPV	\$99M pa		
Summer Peaking Network NPV	\$37M pa		

T33 Network benefit / customer pa

- \$75 (summer) - \$199 (winter)

T31 estimated at 40% more than T33

- \$30 (summer) - \$80 (winter)

Network direct cost / customer pa

- AFLC Equipment \$4.68
- Relays T33 & T31 \$6.55

Retail also derives non-quantified benefits from this common infrastructure

Customer benefit pa (tariff saving)

based on difference between Peak and off peak tariff rates applied to average water eating kWh

- T33/T31 avg. 2.9 MWh pa
- T33 \$156 pa
- T31 \$188 pa

Note Savings derive from Network & Retail collectively in this analysis

Effectiveness Evaluation for T33 Water Heating

TABLE 1. EXTERNAL SUCCESS FACTORS FOR THE NETWORK-DRIVEN DSM PROJECTS IN THE TASK XV CASE STUDY DATABASE

Project	Government Policies	Regulatory Regime	Market Structure	Commitment by Project Proponent	Technology Availability	Commercial Considerations	Public Relations Benefits
Hot Water heating Load Control	√		√	√	√	√	

Project	Project Objectives	Target Market	Demand-side Measures Used	Barriers Addressed	Outreach and Marketing	Participation Process & Customer Service	Delivery Mechanisms
Hot Water heating Load Control	√	√			√	√	√