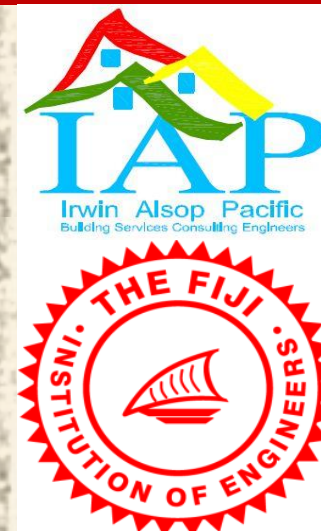




ENERGY EFFICIENCY DEVELOPMENTS AND THE WAY FORWARD BUILDINGS AND ENERGY APPLIANCES



**PRESENTATION TO THE PACIFIC CENTRE FOR RENEWABLE ENERGY AND ENERGY
EFFICIENCY**

NUKUALOFA, TONGA, 20 NOVEMBER 2017

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MANAGING DIRECTOR, IRWIN ALSOP PACIFIC LIMITED, BUILDING SERVICES CONSULTING ENGINEERS

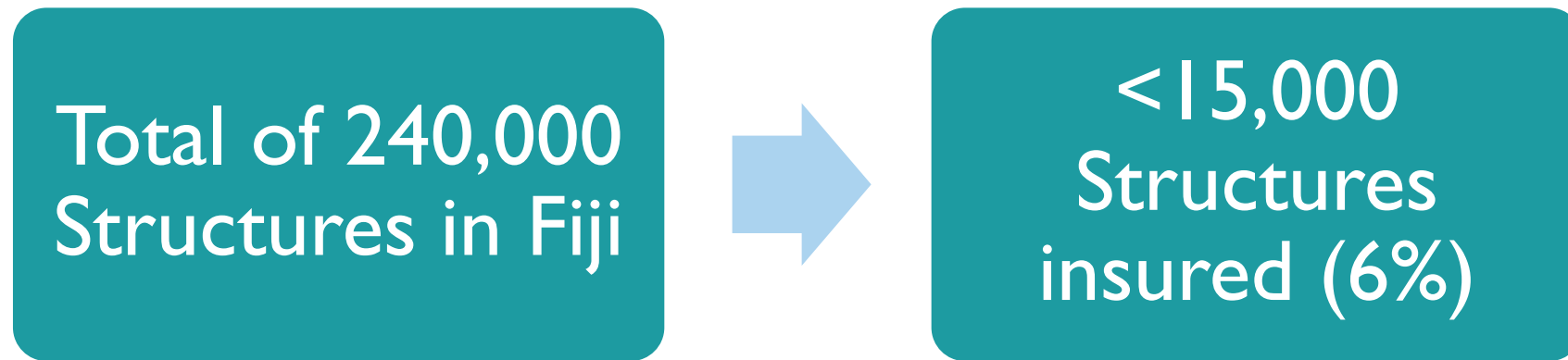
PRESIDENT OF THE FIJI INSTITUTION OF ENGINEERS

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THE BUILT ENVIRONMENT IN FIJI

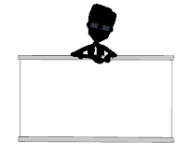
- This presentation focuses on the vertical structures rather than the horizontal structures.



- Concerns about the building standards in the country let alone energy efficiencies.

BACKGROUND TO THE NATIONAL BUILDING CODE

■ Fiji Standard Building Committee



Early 1980
Cyclones : 1983 –
1985

- Review of Insurance Cover (Fiji) & Re-Insurance Cover (London)
- Call For Building Codes by Reinsurers to continue to receive cover
- FBSC Setup – mid 80's
- Code Completed in 1990
- First Chair was the Governor of the Reserve Bank of Fiji
- Replaced by Clive Amputch, Commissioner of Insurance within the Reserve Bank
- Code Legislated as the Public Health Act 2004
- FSBC not revived after the Commissioner of Insurance position at the Reserve Bank was abolished
- FSBC now re-activated in March of 2016 – Warren Yee as the Chairman

NATIONAL BUILDING CODE OF FIJI

- Due to the huge rise in costs of buildings compliance was not made mandatory it was only applied within the urban boundaries and those needing cyclone certification.
- 70 trade Standards of which 23 are in the building sector.
- 56 Standards are referenced under the NBCF.
- Huge responsibility now on those in the Construction Industry to adhere to the NBCF.
- Whilst now the Code is in need of upgrades it is still a very relevant document as it provides the relevant design guides and performance Standards.



REPORTING STRUCTURE FOR FBSC

Minister Of
Industry Trade
And Tourism

Trade Standards
Advisory
Committee

Fiji Building
Standards
Committee-16
Organisations
Represented

4 WORKING GROUPS

- WG1 Awareness
- WG2 Enforcement.
- WG3 Registration and Licensing of Professionals and Builders.
- WG4 Trade Standards Testing and Compliance.

ENFORCEMENT AGENCIES

- Government Ministries
 - Town and Country Planning
 - Ministry of Labour
 - M.IT
 - M.ITT
 - Rural Development
 - Local Authority Bodies
 - City Councils – Suva and Lautoka
 - Town Councils
 - Rural Authorities
- Statutory Authority Bodies
 - Fiji Roads Authority
 - Water Authority of Fiji
 - Telecom Fiji Ltd
 - National Fire Authority
 - Fiji Electricity Authority
- Other Controlling Authorities
 - iTaukei Trust Board – Native land lease
 - Housing Authority of Fiji
 - Private land developers and Body Corp.



WHERE DOES NBCF APPLY

- All Government projects.
- All AID projects.
- All projects where cyclone insurance cover is needed in Fiji and indirectly all loans from Commercial Banks in Fiji for Building Construction.
- Within all Local Authority jurisdiction with the exception of squatter settlements, informal settlements and villages
- All other areas – highly recommended



RECOGNISED BODIES IN CONSTRUCTION

- Fiji Institution of Engineers
- Fiji Association of Architects
- Fiji Institute of Quantity Surveyors
- Fiji Institute of Land Surveyors
- Fiji Institute of Valuation and Estate Management
- Fiji Master Builders Association
- Umbrella organization Construction Industry Council



VERTICAL STRUCTURES INCREASING SOPHISTICATION

- Larger footprint , medium and high rise structures
- Requirement for temperature regulation and its consequences
- Improved personal comforts led by tourist demands and needs
- Fire safety provisions increased
- Mood settings requirements with lighting and sound and AV
- Improved demands on health standards
- Increased security needs



CONDITIONED AIR REQUIREMENTS

- Passive cooling
- Forced ventilation
- Cooling the air
- Air conditioning small spaces
- Air conditioning large spaces or spaces with many zones
- Scalable complexity
- Split systems, packaged systems, multiple indoor units, VRV systems, central plant
- Energy efficiency considerations
- MEPS



ELECTRICAL SERVICES



- Lighting
- Technology and energy efficiency changes from candle, fossil fuel, incandescent, fluorescent, MV, energy efficient
- LED lighting
- Controls, automation, mood settings

ENERGY SOURCES, ALTERNATE FUELS

- Will not touch on all options
- Current options recently adopted or being considered
- Solar
- Gas
- Wind
- Financial viability considerations



OTHER BUILDING SERVICES

- Water supply and sources
- Waste water treatment and recycling
- Building automation



FINANCIAL VIABILITY AND LIFE CYCLE ANALYSIS

- In the commercial world financial viability is paramount
- Factors to consider
 - Who is bearing the capital cost
 - How is the project being financed
 - Who is bearing the operating costs
 - Who is paying for maintenance of the equipment
 - Space availability, aesthetics, accessibility for maintenance,
 - What is the clients position on green technology and energy efficiency
 - Return on investment for the developer
 - Any green funding available





Architects - Yellow Architects & BSW Architects | Building Services Consultants– Irwin Alsop Pacific Ltd

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**Revenue & Customs
Services Complex**

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Services Complex**



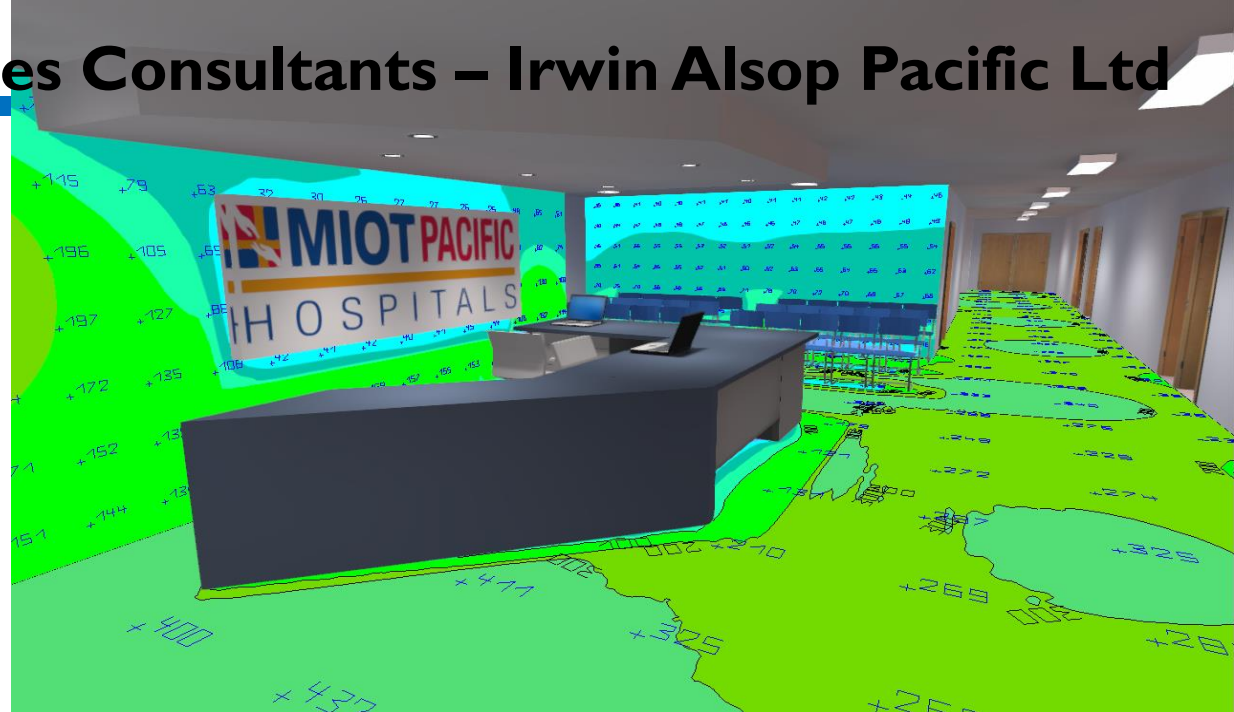
Building Services Consultants – Irwin Alsop Pacific Ltd
Architects – Jaimi Associates



Building Services Consultants – Irwin Alsop Pacific Ltd



MIOT Hospital, Suva. Building Services Consultants – Irwin Alsop Pacific Ltd





Building Services Consultants – Irwin Alsop Pacific Ltd
Architects - LHM

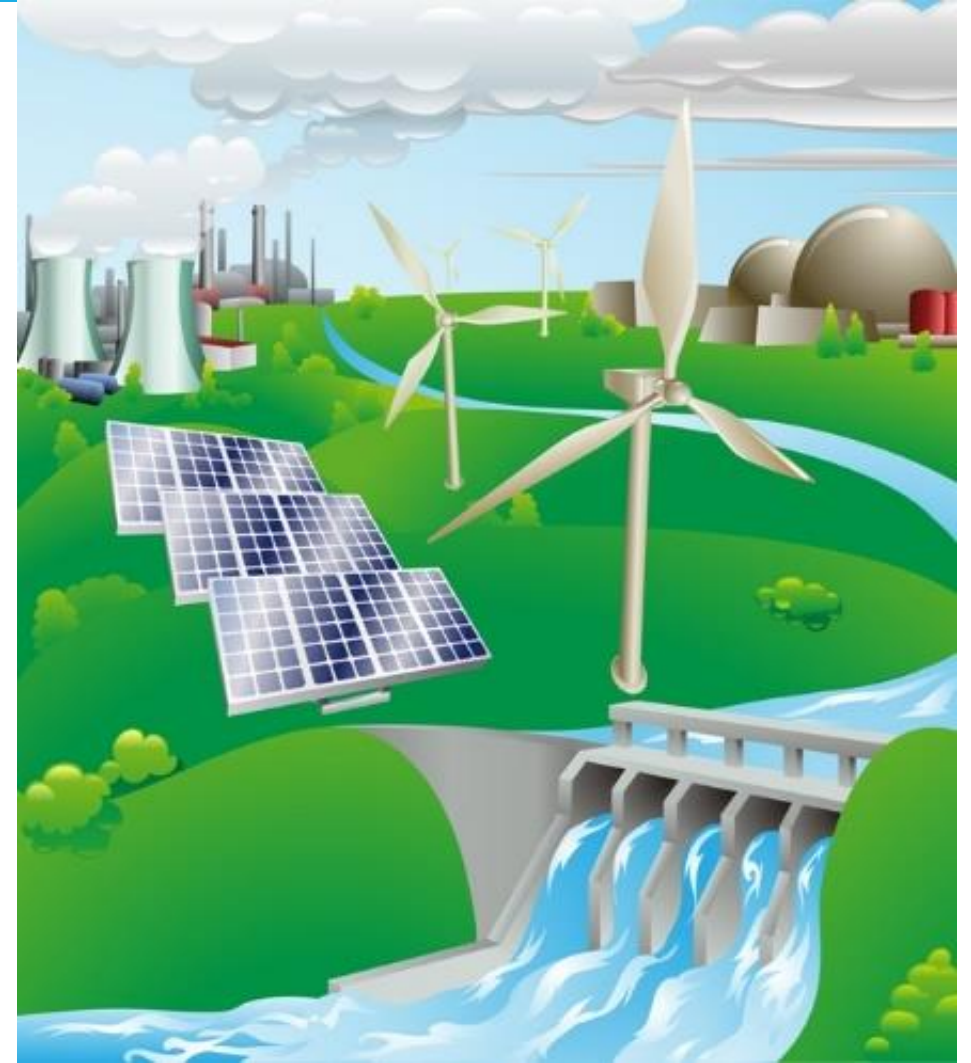
ENERGY APPLIANCES



- Larger commercial, industrial, leisure, retail, manufacturing would use consultants
- Domestic structures and equipment rely on what is available in the market place
- Need to regulate and control the energy performance and ratings that the general public has access to
- MEPS has been introduced, how do we verify the claims of energy efficiencies?
- Internationally recognised energy labels
- Local test facilities?

WAY FORWARD

- Awareness amongst all stakeholders
- Reduce reliance on fossil fuels
- Increased use of renewable energies
- Energy efficiencies push to become the obvious choice
- Funding to improve financial viability
- Legislation
- Best practice guidelines
- Competition and promotion of energy star ratings



WHERE TO FROM HERE, HOW CAN YOU HELP YOURSELF?

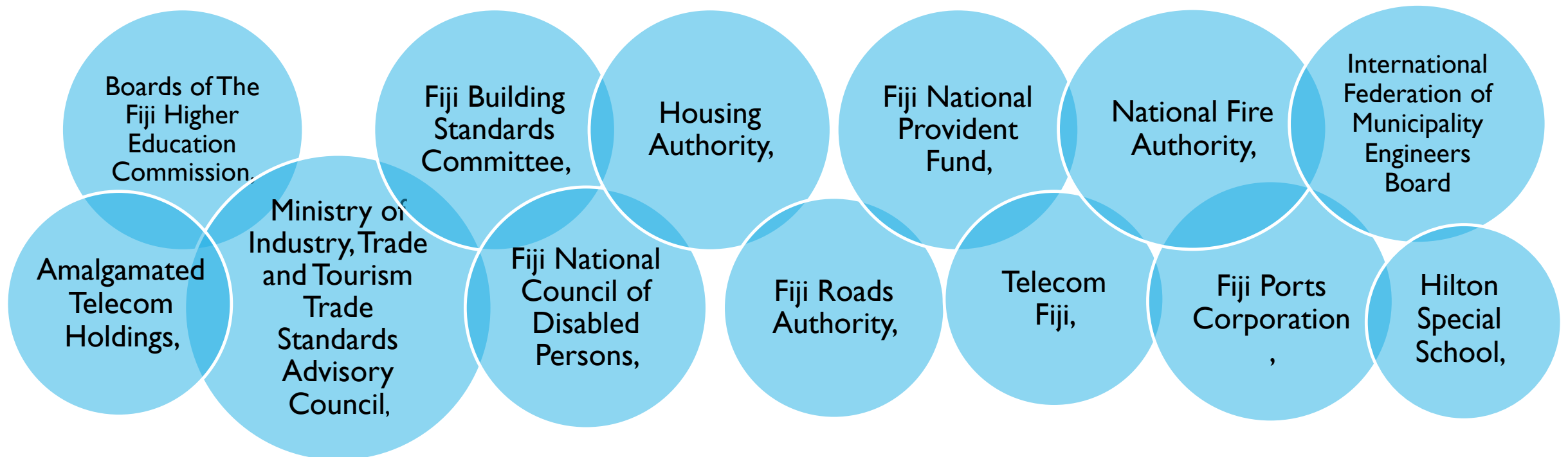
- Familiarise yourselves with your energy consumption appliances – lighting, kitchen appliances, office equipment, air conditioning, pumps, motors, etc
- Familiarise yourselves with your consumption patterns
- Plot your energy usage and patterns
- Conduct a walk through audit
- Investigate and implement quick wins in energy savings
- Look at longer term plant retirements and efficiency options
- Use ISO 50001 Energy Management Systems as a guide

FIJI INSTITUTION OF ENGINEERS



- Established around 30 years ago.
- Run by a Council elected from its membership every year.
- Has a range of members from Fellows, Corporate, Technical, Associates, Graduates and Affiliate Members.
- Has close ties with IPENZ and IE Australia.
- Member of the World Federation of Engineering Organization and the South Pacific Engineers Association.

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- Key requirement of getting onto the Insurance Council of Fiji list of Structural Engineers for cyclone certification work is to be a current corporate member of the FIE with the area of practice being Structural Engineering.
 - Hold a seat on the Fiji National University Council.
 - Corporate Members are sought after to serve on Government and Statutory Boards, our members currently serve in their individual capacity on the:



CONTACT

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