WREC XVI

World Renewable Energy Congress – Australia 2017

International Conference 'Towards 100% Renewable Energy'

Conference Program

Sunday 5th February

Time	Event
9:00AM– 4:30PM [Registration 8:00 - 9:00AM]	**Workshop: Solar Photovoltaic Power Systems for Residential, Commercial & Off-Grid Applications.** One Day Workshop at Murdoch University, Kim Beasley Lecture Theatre.
4:30PM	**Registration** starts at Victoria Hall, High Street, Fremantle.
5:30 – 6:30PM	**Public Meeting** (Victoria Hall, High Street, Fremantle) – "Is 100% Renewable Energy Practical?" Chairperson: **Mr Hamish Jolly**, *Biogass Renewables Ltd, Canning Vale, Western Australia.* Welcome: **Mayor of Fremantle City Council, Dr Brad Pettitt**. Speakers: 1. **Prof Ray Wills,** *Managing Director, Future Smart Strategies, Perth.* 2. **Prof Ali Sayigh,** *Director General, World Renewable Energy Network.* 3. **Dr David Renne,** *President International Solar Energy Society, USA.* 4. **Prof Peter Newman,** *Professor of Sustainability, Curtin University Sustainability Policy Institute.*
6:30 -8:30PM	**Welcome Reception at Fremantle Council Hall**
	Welcome from the **Hon. Mayor of the City of Fremantle, Dr Brad Pettitt**
	Welcome from **Prof Bogdan Dlugogorski**, Dean of the School of Engineering & Information Technology, Murdoch University.

Monday 6th February

Time	Event
7:30AM	**Registration ECL Atrium, Murdoch University.**
8:30AM	**Conference Inauguration (ECL 1)** **Chair: Dr Martin Anda,** *Chair of Environmental Engineering, Murdoch University.* Welcome to Country: **Mrs Marie Taylor**, *Aboriginal Noongar Elder*. Welcome from **Prof Bogdan Dlugogorski**, Dean of the School of Engineering & Information Technology, Murdoch University. Welcome from Murdoch University: **Prof Eeva Leinonen**, *Vice Chancellor, Murdoch University.* Welcome from WREN: **Prof Ali Sayigh**, *Director General, World Renewable Energy Network* Inaugural Speech: **Mr Matt Taylor MLA,** *Parliamentary Secretary to the Minister for State Development, Transport and Innovation.*
9:00AM	**Keynote Speeches (ECL 1)** **Chair: Prof. Philip Jennings**, *School of Engineering, Murdoch University* 1. **Prof Ali Sayigh,** *Director General, World Renewable Energy Network* 50% of Global Electricity or more will be generated from Renewable Energy by 2030 2. **Prof David Renne**, *President International Solar Energy Society* Is 100% Renewable Energy Achievable? 3. **Prof Peter Newman**, *Curtin University Sustainability Policy Institute.* The Rise and Rise of Renewable Cities: A Global and Local Overview
10:15AM	**Opening of Exhibition & Poster Presentations (ECL Atrium)** **Address by Hon. Francis (Fran) Michael Logan MLA,** *Shadow Minister for Housing; Local Jobs; Training and Workforce Development* **Morning Refreshments**
10:45AM	**Common Session 1 , Keynote Speeches (ECL 1)** **Topic: Is Renewable Energy Sustainable?** **Chair: Louise Duxbury,** *Greenskills, Denmark, Australia.* 1. **Dr Ir. Unggul Priyanto,** *Chairman BPPT, Jakarta, Indonesia.* Indonesia Energy Outlook 2015-2050: New and Renewable Energy Development. 2. **Prof. Federico Rosei**, *University of Quebec, Canada* What type of Energy for the future of humanity? 3. **Mr Karl Rodrigues,** *Deputy Director, CSIRO Energy Flagship, Newcastle, NSW.* CSIRO Energy - Current and Immediate Future Research. 4. **Prof. Abubakar Sambo,** *World Energy Council, Nigeria* Sustainable power supply in Nigeria: The need to expand the energy mix.
12:05PM	**Lunch Break**

1:00PM	**Common Session 2 (ECL 1)** **Topic: Land Use & Emerging Technology** **Chair: Prof Parisa Arabzadeh Bahri**, *Murdoch University* 1. **Frank Marra**, CEO *LandCorp, Perth* Sustainable land development and innovation 2. **Seán McGoldrick**, *Executive Manager Asset Management, Western Power* Impact of new emerging technology opportunities, coupled with the current challenges that the Western Power network faces. 3. **Dr. Andhika Prastawa**, *BPPT, Jakarta, Indonesia.* Smartgrid Technology Roadmap in Indonesia: A vision in Improving Grid Integration of Renewable Energy, and Electric Power Quality.

2:00PM	**Parallel Sessions 2**			
Session 2A (ECL1) **Topic: Low energy Architecture.** **Chair: Dr David Goodfield**, *Murdoch University*.	**Session 2B (ECL2)** **Topic: Governance, Policy & Energy Management.** **Chair: Dr Yvonne Haigh,** *Murdoch University*	**Session 2C (ECL3)** **Topic: Waste to energy** **Chair: Dr Navid Moheimani,** *Murdoch University*	**Session 2D (ECL4)** **Topic: Industrial solutions** **Chair: Dr Mario Schmack,** *Murdoch University*	**Session 2E (ECL 2.031)** **Topic: Sustainability, transition & education** **Chair: Prof Dora Marinova,** *Curtin University*
1. **Mr Timothy O'Leary**, *University of South Australia.* *20* A comparison of Home Energy ratings under the NatHERS scheme to actual monitored energy consumption in Australian homes.	1. **Dr Yoshihiro Yamamoto,** *Takasaki City University of Economics* *18* Optimal organizational forms for local renewable energy projects.	1. **Mr Hope Iyamu,** *Murdoch University* *54* Socio-Technical Systems Analysis of Waste-to-Energy from Municipal Solid Waste in Developing Economies: A Case for Nigeria.	1. **Prof Xinman Chen,** *South China Normal University.* *12* Direct Growth of MnCo2O4.5 Nanoneedle Array on Nickle Foam for High Performance Asymmetric Supercapacitors.	1. **Prof Chris Lund,** *Murdoch University* *67* Sustainable Energy Education: Addressing the Needs of Students and Industry.
2. **Mrs Parisa Esmaeilimoakher,** *Murdoch Uni* *36* Building Thermal Performance Assessment for Improving Building Energy Efficiency in Social Housing in Australia	2. **Ms Claudia Gonnelli,** *University of Auckland.* *147* Online but off target.	2. **Mr Nugroho Adi Sasongko,** *Murdoch University* *93* Process engineering microalgae culture for treating anaerobic digestion effluent of livestock waste.	2. **Dr Preethi Vijayarengan,** *Hindustan University, India.* *180* Performance of Nano Photocatalysts for the Recovery of Hydrogen and Sulphur from Sulphide Waste Streams.	2. **Mr Mike Burbridge,** *Curtin University* *144* Do as I say: don't do as I do? A study of Australian Universities' collective response to climate science. 3. **Dr Martin Brueckner,** *Murdoch University.*

3. **Ms Gazinga Fareik,** *Barbara Hardy Institute/University of South Australia.* *161* Techno-economic comparison between different systematically optimized standalone solar air-conditioning options for Australian 6-star home.	3. **Prof Koesmawan Adang Soebandi,** *FFairness Indonesia Daya Company.* *173* Prospects of Renewable Energy within Remote/Rural Area in Indonesia.	3. **Dr Louisa Rios**, *Murdoch University* *40* Techno-economic evaluation of microalgae cultivation for treating anaerobic digestion piggery effluents.	3. **Mr Eka Razak Kurniawan,** *Energy Security, Faculty of Defense Management, Indonesia Defense University, Indonesia.* *113.* Characterization and Alkaline Pretreatment Lignocellulose of Cabomba caroliniana and The Role in Realizing Energy Security.	*121* Landscapes as mirrors of local energy transitions: A comparative approach using an institutional lens.
3:00PM	**Coffee Break**			

3:30PM	**Common Session 3 (ECL 1)** **Topic: Energy Policy & Economics** **Chair: Dr Vanessa Rauland** , *Curtin University Sustainability Policy* 1. **Mr Simon Gamble**, *Hydro Tasmania* Rottnest Island Water and Renewable Energy Nexus Project. 2. **Ms Monica Oliphant AO**, *former President International Solar Energy Society.* Energy Policy - Examples of Renewable Energy Disruption of the Electricity Supply Industry. 3. **Mr Greg Allen,** *Chief Operating officer***,** *Carnegie Clean Energy, Fremantle.* Magnifying opportunity in the microgrid market.
4:30PM	**Parallel Sessions 3**

Session 3A (ECL1) **Topic: Policy & practice** **Chair: Ms Monica Oliphant AO,** *fmr. ISES President* 1. **Ms Emilia Lawonski,** *Murdoch Uni*versity *70* Context and community renewable energy development in Western Australia: towards effective policy and practice.	**Session 3B (ECL2)** **Topic: Economics & investment.** **Chair: Prof Wasim Saman**, *University of South Australia* 1. **Dr Wahidul Biswas**, *Curtin University* **presented by Dr Brian Boswell,** *Curtin University* *22* Techno-economic and environmental implications of electricity generation from solar updraft chimney power plant in Marble Bar in Western Australia.	**Session 3C (ECL3)** **Topic: Decarbonisation & LCA** **Chair: Prof Chris Lund,** *Murdoch University* 1**. Mr John Shiel**, *University of Newcastle* *13* Rapid Decarbonisation of Australian Housing in Warm Temperate Climatic Regions for 2050	**Session 3D (ECL4)** **Topic: Energy transition** **Chair: Dr Martin Brueckner,** *Murdoch University* 1. **Mr John Sykes**, *University of Western Australia.* *21* The energy transition: A mining and exploration industry perspective	**Session 3E (ECL 2.031)** **Topic: Community development.** **Chair: Mr Mike Burbridge,** *Curtin University* 1. **Ms Gloria Rupf***,* *Murdoch University*. *52* Assessing the viability of community scale biogas systems in Sub-Saharan Africa.

2. **Dr Louise Duxbury,** *Greenskills, Denmark, WA.* *114* A conceptual framework for integrated planning of a diversified water-energy solution: an Australian case study. 3. **Mr Simon Dawkins,** *Curtin University* *107* Bioenergy and agriculture: a troublesome policy mix.	2. **Dr Mahdi Shahnazari,** *School of Energy and Resources, University College London* *3* How interacting and uncertain energy policies affect portfolios of electricity generation investments: Insights from an Australian case study. 3. **Dr Ravi Prakash,** *M.N.N.I.T, Allahabad (UP), India* *33* Energy and material constraints in India's economic growth.	2. **Dr Abdulrahman Alamoud,** *King Saud University, Riyadh, Saudi Arabia* *130* Prospects of Solar Photovoltaic in Saudi Arabia: what is holding the PV avalanche? 3. **Ms Christine Eon,** *Curtin University.* *39* Verification of an emerging LCA design tool through real life performance monitoring.	2. **Mr Casper Agaton,** *Ruhr University of Bochum, Germany* *55* To Import Coal or Invest in Renewables: A Real Options Analysis of Energy Investments in the Philippines. 3. **Dr Anis Zaman,** *Climatech International, Australia.* *179* Mitigation, Adaptation and Development Nexus of Renewable Energy Technologies	2. **Mr Thomas Gross,** *University of Applied Sciences and Arts Northwestern Switzerland*, **presented by Dr Alex Zahnd,** *RIDS, Nepal***.** *155* Biogas production for decentralized energy supply in remote high-elevation Himalayan communities. 3. **Mr Syed Zaherur Rahaman**, *RIDSA, Bangladesh* *85* RISDA's experience on dissemination of renewable energy through micro credit in Bangladesh.
5:30-6:15PM	**General Meeting of International Solar Energy Society (ECL3)** **Chair & Introduction: Dr David Renne,** *ISES President***.** **General discussion re ISES representation in Australia and future conferences.**			

Tuesday 7th February

8:30AM	**Common Session 4 (ECL 1)** **Topic: Residential Energy Systems** **Chair: Dr Shaji Mathews**, *AICA Energy, Perth* 1. **Dr Josh Byrne,** *Curtin University.* Mainstreaming Zero Energy Housing in Australia – Josh's House and Beyond. 2. **Mr Craig Carter**, *Murdoch University*. The Rapid Growth and Future Potential of Residential Rooftop Photovoltaic System 3. **Ms Jemma Green**, *Curtin University* Blockchain and the energy revolution.
9:30AM	**Parallel Sessions 4**

Session 4A (ECL1)	Session 4B (ECL2)	Session 4C (ECL3)	Session 4D (ECL4)	Session 4E (SS2.051)
Topic: Heat transfer **Chair: Ms Sangita Bista,** *Murdoch University*	**Topic: Off-grid** **Chair: Dr Alex Zahnd,** *RIDS, Nepal*	**Topic: Optimisation** **Chair: Dr Ali Arefi,** *Murdoch University*	**Topic: Heat pumps, hot water** **Chair: Dr Wahidul Biswas**, *Curtin University*	**Topic: Lighting** **Chair: Dr Abdulrahman Alamoud,** *King Saud University, Riyadh, Saudi Arabia*
1. **Dr Iessa El-Taie,** *University of Buraimi, Sultanate of Oman,* ***presented by Dr Shadia Ikhmayies,*** *Al Isra University, Jordan.* *25* Temperature difference with respect to exposure time for black paint and Galena powder-black paint composite selective surfaces.	1. **Dr Maxime Mussard**, *Nazarbayev University, Kazakhstan* *86* Pre-feasibility analysis of powering a remote research facility under arid conditions in Kazakhstan.	1. **Mr Steven Bondio,** *University College London, Adelaide.* *16* The technology of the middle class: evidence derived from solar photovoltaic intention and adoption survey data in Queensland, Australia	1. **Mr Wei-Chun Kao**, *National Cheng Kung University, China.* *49* The effect of hydraulic integration in the performance of solar collector and heat pump combisystem.	1. **Prof Hellmut Mueller,** *Green Building R & D GmbH, Germany.* *8* Micro-Optical Structures for Daylighting and LED Systems.
2. **Prof Geoff Smith**, *University of Technology Sydney* *31* The importance of surface finish to energy performance.	2. **Mr Bharat Poudel,** *Charles Sturt University* *37* Criteria for sustainable operation of off-grid renewable energy services.	2. **Mr Trevor Lee,** *Exemplary Energy Partners, ACT* *79* Weather Affects Building and PV Performance - Simulation v Monitoring.	2. **Ms Roshaan De Jager,** *University of South Africa.* *137* Validated CFD Simulations of EWH Energy Storage based on Tank Orientation	2. **Dr Abdus Salam Azad,** *Indian Institute of Technology, Delhi.* *105* Experimental study of tubular light pipe system: influence of light reflector on its performance.
3. **Dr Vahid Vakiloroaya,** *University of Western Sydney.* *140* Performance Evaluation of a Solar-Powered Absorption Cooling Plant without Backup System.	3. **Mr Holger Schneidewindt,** *Consumer Association of North Rhine-Westphalia, Germany.* *135* "War For Prosumers" - Innovative business cases for home storage systems: provision of balancing power.	3. **Ms Mariana Salles Pereira da Costa,** *University of Newcastle.* *69* Optimising the design of composite-constructed small wind turbine blades.	**3. Dr Anthony Kwong**, *Frazer-Nash Consultancy, Adelaide.* *118* Banking on Energy Storage: Analytical verification of the performance of large thermocline tanks.	3. **Mr Furat Dawood,** *Murdoch University.* *150* The Renewable Energy Household Lighting for Chibayish inhabitant's in Iraq.

10:30AM	**Coffee Break**
11:00AM	**Common Session 5 (ECL 1)** **Topic: Biofuels & Biomass** **Chair: Dr Xiangpeng Gao,** *Murdoch University* 1. **Dr Stephen Schuck,** *Bioenergy Australia, New South Wales.* Bioenergy: Current Status, Future Directions & International Collaboration

	2. **Prof Michael Borowitzka,** *OzAlgae, Tasmania.* Biofuels from Algae: A Progress Report 3. **Mr Hamish Jolly**, *Biogass Renewables Ltd, Canning Vale, Western Australia.* Economic Viability of Commercial Anaerobic Digestion Bioenergy in Australia
12:00PM	**Parallel Sessions 5**

Session 5A (ECL1)	**Session 5B (ECL2)**	**Session 5C (ECL3)**	**Session 5D (ECL4)**	**Session 5E (Kim Beasley Theatre)**
Topic: Biofuels **Chair: Prof Michael Borowitzka,** *OzAlgae, Tasmania.*	**Topic: Thermal storage** **Chair: Mr Trevor Lee** *Exemplary Energy Partners, ACT.*	**Topic: Waste to energy** **Chair: Dr Stephen Schuck,** *Bioenergy Australia, NSW*	**Topic: Energy policy** **Chair: Ms Jemma Green**, *Curtin University*	**Topic: Performance & Prediction** **Chair: Dr Xianpeng Gao,** Murdoch *University*
1. **Ms Yong Wei Tiong,** *University of Nottingham, Malaysia Campus* *15* Optimization of levulinic acid production from oil palm biomass via mono-alkylated ionic liquids.	1. **Mr Fumi Watanabe,** *Tokyo University of Agriculture and Technolog, Japan* *42* Selection of adsorbents for double effect adsorption refrigeration cycle combined compressor.	1. **Dr Yaakov Anker,** *Ariel University of Samaria.* *124* Integrative approach for wastewater treatment facilities with biomass transformation into energy.	1. **Mr Michael Lord,** *Beyond Zero Emissions, Perth.* *188* Zero Carbon Australia - Renewable Energy Superpower	1. **Dr Saad Odeh,** *Western Sydney University - Sydney City Campus* *133* The Development of a Performance Indicator for PV power generators.
2. **Ms Anna Nadolny,** *Australian National University* *89* Renewable synthetic fuel for ships and planes: financial and environmental evaluation.	2. **Mrs Yu-Chieh Jessie Yen,** *University of the Witwatersrand, Johannesburg. South Africa* *106* Volume segmentation in a stratified vertical EWH tank using steady-state element cycles for energy balance	2. **Dr Xiangpeng Gao,** *Murdoch University*. 134 Occurrence forms of key ash-forming elements in defatted microalgal biomass.	2. **Mr Sam Wilkinson**, *Curtin University* *45* Using the Socio-Technical Perspective to Understand Energy Transitions in Western Australia and Implications for Ancillary Services.	2. **Mr Joss Kesby,** *The University of Newcastle.* *142* Determining the annual energy production of a Diffuser Augmented Wind Turbine using a combined CFD/BEM method.
3. **Mr Nugroho Adi Sasongko,** *Murdoch University* *115* Biofuel production and economic analysis of Botryococcus braunii in Biofilm.	**Prof Ashmore Mawire,** *North West University, South Africa.* *6* Investigation of In-48Sn as a phase change material candidate for thermal storage applications.	3. **Dr Karne de Boer**, *Enerbi Ltd.* 151 The key to making biomass a future player in renewable energy development.	3. **Prof Izumi Ushiyama,** *Ashikaga Institute of Technology, Japan.* *208* Present Status and Target of Japanese Wind Power Generation	3. **Mr Sandip Deshmukh,** *BITS Pilani- Hyderabad Campus.* *143* Prediction and mapping of solar energy potential in Andhra Pradesh, India using artificial neural networks and ArcGIS

1:00PM	**Lunch Break**
2:00PM	**Common Session 5X (ECL 1)** **Topic: Energy storage** **Chair: Dr James Eggleston,** *Curtin University*

	1. **Prof Craig Buckley,** *Curtin University* Metal Hydrides for Concentrated Solar Thermal Energy Storage 2. **Prof Garry Baverstock**, *Murdoch University.* The Role of Thermal Storage as a Precursor to Battery Storage. 3. **A. Prof Ahmad Zahedi**, *James Cook University* Smart Grid and the Role of Electric Vehicle to Support the Electricity Grid during the Peak Demand
3:00PM	**Coffee break**
3:20PM	**Buses leave for Local Field Visits – sign up at registration desk.** **After visits all buses will go via Murdoch Station and Murdoch Village then on to Fremantle Sailing Club for the dinner.**
	Field Trips (see notice board by registration for further details) **A. Micro-grids & storage, + Geothermal and CHP:** **(i)** Energy Made Clean (EMC), Belmont – off grid power, micro-grids and storage commercialized. **(ii)** Fremantle Aquatic Centre CHP and Geothermal Heating Project. **B. Zero carbon homes:** **(i)** A visit to Josh's House (Josh Byrne & Associates), Hilton - a 'Living Laboratory' research project through for Low Carbon Living. **(ii)** LandCorp's Gen 'Y' Demonstration home, White Gum Valley – a practical, sustainable, flexible and cost effective dwelling for 21st Century living. **C. Bioenergy:** **(i)** Biogass Renewables, Jandakot – an industrial sized waste to energy facility. **(ii)** Murdoch University Algae Centre – research facility, algae for biofuel.
6:30 – 9:30PM	**Conference Dinner at Fremantle Sailing Club – ticket only** Dinner sponsor and introduction from **Prof Garry Baverstock,** *Wise Earth.* Welcome from **Hon. Lynn MacLaren MLC,** *Greens member and candidate for South Metropolitan Region.*
9:30PM	**Buses from the dinner to Fremantle and Murdoch Train Stations, and Murdoch Village.**

Wednesday 8th February

8:30AM	**Common Session 6 (ECL 1)** **Topic: Climate change, Renewable Energy Solutions** **Chair: A.Prof Dr Don Harrison**, *Murdoch University.* 1. **Ms Stephanie Unwin**, *General Manager Commercial, Synergy.* The Future of Large Scale Renewable Energy in Western Australia. 2. **Mr Frank Tudor**, *Managing Director, Horizon Power.* Energy in transition – implications for Horizon Power and our customers.

	3. **Prof Ray Wills**, *Managing Director, Future Smart Strategies, Perth.* Climate Change Policies, Emissions Trajectories and Renewable Energy Solutions.
9:30AM	**Parallel Sessions 6**

Session 6A (ECL1)	**Session 6B (ECL2)**	**Session 6C (ECL3)**	**Session 6D (ECL4)**	**Session 6E (SS2.051)**
Topic: Life cycle assessment **Chair: Prof Garry Baverstock,** *Murdoch University*	**Topic: Co-generation, tri-generation & thermal storage** **Chair: Dr Preethi Vijayarengan,** *Hindustan University, India.*	**Topic: Climate & Environment** **Chair: Prof Ray Wills,** *Future Smart Strategies, Perth.*	**Topic: Wind, wave & tide** **Chair: Mr Craig Carter,** *Murdoch University*	**Topic: Electric vehicles** **Chair: A. Prof Ahmad Zahedi**, *James Cook University*
1. **Ms Sangita Bista,** *Murdoch University* *4* Cradle to grave GHG emissions analysis from hydraulic fracking (Gas) in WA.	1. **Dr Somchart Chantasiriwan,** *Thammasat University, Thailand.* *38* Using Superheated Steam Dryer for Cogeneration System Improvement and Water Recovery	1. **Mr Ian Muirhead,** *Bureau of Meteorology* *34* Enhanced climate observations and data access platforms to support the renewable energy industry.	1. **Mr Bimo Adi Kusumo,** *Universitas Indonesia* *35* Competitiveness of Utility Scale Wind Farm development with Feed-In Tariff in Indonesia.	1. **Mr Alan Dunn,** *Murdoch University.* *46* Why EVs?
2. **Mr Andrew D. Moore,** *Life Cycle Logic* *110* Life cycle assessment of domestic heat pump hot water system in Australia.	2. **Prof Erich Kisi**, *University of Newcastle.* *80* Thermal Energy Storage using Miscibility Gap Alloys.	2. **Mr Trevor Lee,** *Exemplary Energy Partners, ACT* *117* Comparison of Satellite Estimated Hourly Solar Data with Coincident Ground Based Measurements - Applications in Industry and Commerce	2. **Mr Neil Dave,** *Pandit Deendayal Petroleum University, India* *77* Economic evaluation of offshore wind power in west coast of India.	2. **Mr Paul Ryan**, *EnergyConsult, Victoria.* *48* Electricity Demand and Implications of Electric Vehicle and Battery Storage Adoption.
3. **Mr Andrew D. Moore,** *Life Cycle Logic* *132* What is life cycle assessment anyway?	3. **Mr Grant van Staden**, *University of South Africa.* *146* Design of an Organic Rankine Cycle system for Waste Heat Recovery from Fischer-Tropsch process	3. **Dr Melinda Marquis,** *NOAA Earth System Research Lab* *129* The Importance of Using Atmospheric Science in the Planning, Siting, Operations, and Maintenance of Wind and Solar Power.	3. **Mr Samuel Evans**, *University of Newcastle.* *72* The extent to which the wind model and simplified load model of the IEC design standard for small wind turbines is valid for built environment sites.	3. **Mr Yusuke Ono,** *Tokyo University of Agriculture and Technology* *41* Evaluation of Possible Hydrogen Supply by Residential Fuel Cell Systems for Fuel Cell Vehicles.

10:30AM	**Coffee Break**

10:50AM	**Common Session 7 (ECL 1)** **Topic: Renewable Energy Network** **Chair: Prof Chem Nair,** *RegenPower, Perth* 1. **Dr Vanessa Rauland,** *Curtin University* The importance of schools in decarbonising society. 2 & 3. **Mr Angus King and Mr Ben Rose**, *Sustainable Energy Now (SEN), Perth* Presentations I & II of SIREN - SEN's Interactive Renewable Energy Network tool 4. **Mr Raoul Abrutat**, *BayWa r.e. Renewable Energy, Perth.* What thinking is required for a 100% renewable energy society?
12:00AM	**Parallel Sessions 7**

Session 7A (ECL1)	**Session 7B (ECL2)**	**Session 7C (ECL3)**	**Session 7D (ECL4)**	**Session 7E (Kim Beasley Theatre)**
Topic: Networks & Innovation **Chair: Mr Ben Rose,** *Sustainable Energy Now (SEN), Perth.*	**Topic: Utility scale** **Chair: Mr Angus King,** *Sustainable Energy Now (SEN), Perth*	**Topic: Innovation** **Chair: Dr Tania Urmee,** *Murdoch University*	**Topic: Power generation** **Chair: Dr GM Shafiullah,** *Murdoch University*	**Topic: Green economy** **Chair: Mr Andrew Moore,** *Murdoch University*
1. **Mr Baran Yildiz,** *University of New South Wales.* *75* Short-term forecasting of individual household electricity loads with investigating impact of data resolution and forecast horizon.	1. **Prof Ricardo Ruther,** *Universidade Federal de Santa Catarina, Brazil***.** *9* Performance assessment of utility-scale PV power plants in warm and sunny climates	1. **Dr Shadia Ikhmayies,** *Al Isra University, Jordan.* *10* Synthesis of ZnO Hexagonal Prisms on Aluminum substrates by the Spray Pyrolysis Technique	1. **Mr Bin Lu,** *Australian National University.* *123* Simulations of high penetration of wind and photovoltaics electricity in the South West Interconnected System in Western Australia.	1. **Ms Anna Chapman,** *Murdoch University.* *136* How Green Growth can benefit Australian cities with Renewables.
2. **Prof Chem Nayar**, *Regen Power, Perth.* *24* Innovative Solar Diesel Hybrid Energy System.	2. **Mr Dean Laslett,** *Murdoch University* *88* 100% renewable energy scenarios for the south west of Western Australia.	2. **Dr Tao Ma,** *Shanghai Jiao Tong University, China.* *178* Study on Phase Change Material applied in photovoltaic systems for thermal regulation.	2. **Mr Taskin Jamal,** *Murdoch University*. *47* Techno-economic Impacts of Higher Penetration of PV Generation in Remote Australian Electricity Networks.	2. **Prof Abdul Aziz Samad,** *University Tun Hussein Onn, Malaysia.* *145* Development of Green Concrete from Agricultural and Construction Waste.
3. **Prof William Grace,** *University of Western Australia* *197* Exploring the Death Spiral: A system dynamics model of the electricity network in Western Australia	3. **Mr Kim Brooksbank,** *Department of Agriculture and Food, Western Australia.* *157* Australian Biomass and Bioenergy Assessment (ABBA).	3. **Dr Rudy Laksmono**, *Energy security, Indonesia Defense University.* *207* Biogas production from modified starch wastewater at the anaerobic digester.	3. **Dr Kanzumba Kusakana,** *Central University of Technology, Free State, South Africa.* *5* Benefits of multiple paralleled diesel generators in traditional single-generator for micro isolated applications.	3. **Dr Puan Yatim**, *UKM-School of business, University Kebangsaan, Malaysia.* *148* Sustainable supply chain: Feedstock logistics issues of palm oil biomass industry in Malaysia.

1:00 PM	Lunch Break

Innovate Australia will meet in the Kim Beasley Theatre from 1:00PM onwards

1:45PM	**Common Session 8 (ECL 1)** **Topic: Supply solutions** **Chair: Mr Simon Dawkins,** *Oil Mallee Australia* & *Curtin University*. 1. **Mr Colin Mallett,** *Trusted Renewables Ltd., UK.* *138* ICARUS: Reaching the sun with solar coins and smart solar panels. 2. **Prof Wasim Saman**, *Uni of South Australia* Solar Thermal Energy Storage: A Part of the Solution for a Secure Future Grid. 3**. Mr Mark Taylor,** *Josh Byrne & Associates, Fremantle.* Josh's Battery – a more even relationship with the grid. 4. **Mr Joep Vaessen,** *AECOM, Perth.* Combining Powers - Renewable Energy Co-location.
3:05PM	**Parallel Sessions 8**

Session 8A (ECL1)	**Session 8B (ECL2)**	**Session 8C (ECL3)**	**Session 8D(ECL4)**	**Session 8E (ECL 2.031)**
Topic: Fuel cells, thermal storage. **Chair: Dr Mohammad Arif** *Deakin University*	**Topic: Forecasting & optimization** **Chair: Dr Martina Calais,** *Murdoch University*	**Topic: Energy Policy.** **Chair: Dr Arifeen Wahed**, *Solar Energy Research Institute of Singapore (SERIS)*	**Topic: Innovation & Technology** **Chair: Dr Tao Ma,** *Shanghai Jiao Tong University, China.*	**Topic: Industrial solutions.** **Chair: Mr Raoul Abrutat,** *BayWa r.e.Renewable Energy, Perth.*
1. **Dr Chang-Soo Kim,** *Korea Institute of Energy Research* *53* Performance of MEA with patterned membrane for polymer electrolyte fuel cell.	1. **Mr Thomas Schmidt,** *University of Oldenburg, Germany.* *159* Short-term solar forecasting based on sky images for the integration of higher shares of PV generation in remote electricity networks.	1. **Ms Genevieve Simpson,** *University of Western Australia.* *51* Solar Power and Policy Powerlessness – Perceptions of persuasion in residential solar energy policy development.	1. **Prof. Yueh-Heng Li,** *Department of Aeronautics and Astronautics, National Cheng Kung University, Taiwan.* *172* Development of a small-scale thermophotovoltaic tubular reactor.	1. **Prof Ashraf Uddin,** *University of New South Wales* *84* Perovskite solar cells for roll-to-roll fabrication.
2. **Mr Alexander Post,** *University of Newcastle.* *68* Price Estimation for Miscibility Gap Alloy Thermal Storage Deployments	2. **Dr Thilo Kilper,** *Next Energy Research Centre for Energy Technology, Oldenburg, Germany.* *163* Solar short-term forecasts for predictive control of battery storage capacities in remote PV diesel networks.	2. **Dr Tania Urmee,** *Murdoch University* *158* A Policy Framework and Industry Roadmap Model for Sustainable Oil Palm Biomass Electricity Generation in Malaysia.	2. **Mr Ketul Khambhayata,** *Pandit Deendayal Petroleum University, India.* *206* Application of ORC power power plant in a mature Oil Field: Study in Kalol Field and Jhalora Field, North Cambay Basin, Gujarat	2. **Dr Ali Arefi**, *Murdoch University.* *7* Distribution transformer lifetime analysis in presence of demand response and rooftop PV integration.

3. **Dr Heber Sugo,** *University of Newcastle,* **presented by Dr Dylan Cuskelly**, *University of Newcastle* *87* Neutron diffraction in situ studies of operating MGA thermal storage materials.	3. **A.Prof Muhammad Adli Abdullah,** *International Islamic University Malaysia.* *166* Fuzzy logic Based Particle Swarm Optimisation MPPT Controller for an Interleaved Direct Current Charging System.	3. **Mr Dorji Yangka,** *Curtin University.* *164* Energy Policy to Achieve Simultaneous Goals in Carbon Neutral, GDP and GNH: the Bhutan Story.	3. **Dr Jae-Kon Kim,** *Korea Petroleum Quality & Distribution Authority(K-Petro)* *167* Next Generation Liquid Biofuels Production from Microalgae Biomass in Korea.	3. **Mr David Ompong,** *Charles Darwin University.* *43* Influence of Charge Carrier Mobility on the Open-circuit Voltage of Perovskite Solar Cells
4:05PM	**Coffee Break**			

4:20PM	**Common Session 9 (ECL 1)** **Topic: Specific interest** **Chair: Prof Erich Kisi**, *University of Newcastle.* 1. **Mr Alex Zahnd**, RIDS-Nepal *11* Modular Pico-Hydro Power Plant for Remote Himalayan Villages. 2. **Dr Arifeen Wahed**, *Solar Energy Research Institute of Singapore (SERIS),* Levelized Cost of Solar Thermal System for Process Heating. 3. **Dr Venkatachalam Anbumozhi,** *Economic Research Institute for ASEAN and East Asia, Jakarta.* Geothermal Energy Barriers, Policies & Economics. 4. **Ms Anna Sawyer**, *Royal Automobile Club (RAC), Manager of Road Safety.* RAC's Sustainability Agenda.
5:40PM	**Parallel Sessions 9**

Session 9A (ECL1)	**Session 9B (ECL2)**	**Session 9C (ECL3)**	**Session 9D (ECL4)**	**Session 9E (ECL 2.031)**
Topic: Transport **Chair: Ms Gloria Rupf**, *Murdoch University*.	**Topic: Thermal energy** **Chair: Mr Patrick Karangwa,** *Global Humanitarian and Development Foundation, Ruwanda.*	**Topic: Technical analysis** **Chair: Prof Sandeep Deshmukh,** *BITS Pilani- Hyderabad Campus, India*	**Topic: PV adaptation** **Chair: Prof Abdul Aziz Samad,** *University Tun Hussein Onn, Malaysia.*	**Topic: Remote areas** **Chair: Dr Venkatachalam Anbumozhi,** *Economic Research Institute for ASEAN and East Asia, Jakarta*
1. **Dr Siti Fauziah,** *International Islamic University Malaysia.* *182* Modular Battery state equalization	1. **Mr Ashish Kr. Sharma,** *Indian Institute of Technology Delhi, India3.* *197*	1. **Ms Dewi Maria Rahayu,** *Indonesia Defense University.* *122* Magnetic Analysis of Dieng-Batur	1. **Dr Mathias Jehling,** *Karslruhe Institute of Technology, Germany* *190* Adapting energy demand to	1. **Mr Rolando Madriz-Vargas**, *University of New South Wales.* *194* Community Renewable Energy in

with particle swarm optimisation for Green Electric Motorbike. 2. **Dr Prafula Pearce,** *Curtin University* *195* Taxes to influence Energy Use in Road Transportation in Australia. 3. **Mr Alan Dunn,** *Murdoch University* *169* Murdoch University 2015 Survey: The impact of Energy Security and Environment concerns on the fuel mix for light passenger vehicles in Australia during the near future.	Effect of Incentives on the Financial Attractiveness of Solar Industrial Process Heating in India. 2. **Prof Maurizio Sasso,** *Università del Sannio, Italy.* *191* Integration between electric heat pump and PV system to increase self-consumption of an office application. 3. **Mr Olumuyiwa Odufuwa** *Central University of Technology, Free State Bloemfontein, South Africa.* *81* Performance of Solar Thermal Organic Rankine Cycle (STORC) Power with parabolic through system.	Geothermal Area. 2. **Mr Ashley Clifton,** *Deakin University.* *76* Failure Analysis of Collector Circuits Associated with Wind Farms. 3. **Mr Humphrey Sirengo,** *Ashikaga Institute of Technology, Japan.* *205* Study on an Economical Feasibility of Wind-Diesel Hybrid System: Case Study in Baragoi, Samburu County, Kenya.	renewable electricity supply: Potentials for an integrated PV-heat generation system. 2. **Dr Les Westerlund,** *Murdoch University.* *192* Mobile Papermaking Trailer with Solar Power and Water Systems Example.	Panama: A Sustainability Assessment of the "Boca de Lurá" PV-Wind Hybrid Power System. 2. , **Prof Manuel Correia Guedes**, *Instituto Superior Técnico de Lisboa, Portugal,* **presented by Prof Gustavo Cantaria**, *Centro Universitário de Brasília, Brazil* *243* Low Energy, Low-Tech Building Design in Extreme Cold Contexts. 3. **Dr Raj Dahiya,** *Indian Institute of Technology, Delhi.* *201* Greenhouse gas methane emission from the Indian livestock sector: baseline and mitigation scenarios.

6:40PM	**Closing Session (ECL 1)** **Closing ceremony sponsor** – **Holman Fenwick and Willan** *Solicitors, Perth* **Mr Simon Adams,** Managing Partner. Commercializing renewable energy projects: key legal considerations. **Closing speech: Ms Simone Frances McGurk MLA,** *Shadow Minister for Community Services; Children's Interests; Women's Interests.* **Concluding Remarks: Prof Ali Sayigh,** *Director General World Renewable Energy Network.*
7:00PM	**Closing Ceremony (ECL Atrium). Catering sponsored by Holman, Fenwick & Willan.**

Thursday 9th February 2017

9:00AM	**Rottnest Island Technical Tour*** - Prepaid delegates only. Meet at the B-Shed Ferry Terminal, Fremantle Harbour, **no later than 8.45am please**. See notes emailed with the final program

*Not included In Registration fee

Poster Presentations

	Author	Affiliation	Poster Title
1	Mr Md Moktadir Rahman	Murdoch University, Australia.	Voltage management using residential demand response in a low voltage Australian network.
2	Dr Kanzumba Kusakana	Central University of Technology, Free State, South Africa	Influence of demand sectors on grid-connected PV systems' optimal energy dispatch.
3	Mr Md Moktadir Rahman	Murdoch University, Australia.	Enhanced Frequency Response Service for Maximization of Renewable Energy Generation Penetration using Residential Demand Response.
4	Mrs Jane Loveday	Curtin University Sustainability Policy Institute, Curtin University.	Quantifying radiation from thermal imaging of residential landscape elements.
5	Mr Sellam Mebrouk	Universty Bechar, Algeria.	Automatic Dual Axis Sun Tracking System using Improved Perturbs and Observes MPPT Algorithm.
6	Dr Louisa Rios	University of Campinas, Brazil.	Cultivation of Desmodesmus sp. in vinasse for lipids production
7	Mrs Shaymaa Albohani	Murdoch University, Australia.	Polymer templated nickel cobaltate for energy storage.
8	Mr Alexander Mosqueda	Tokyo Institute of Technology, Japan	Hydrothermal treatment of pineapple peel waste for solid.biofuel and liquid fertilizer.
9	Mr Md Asaduzzaman Shoeb	Murdoch University, Australia.	Voltage and Frequency Analysis of Droop Controlled Renewable Energy Based Standalone Microgrid.
10	Mr Mark Copus	University of Newcastle, Australia	Scale up and Thermal Performance of Miscibility Gap Alloy Thermal Storage Materials.
11	Mr Piotr Olczak	Cracow University of Technology, Poland	Ecological impact of photovoltaic–thermal solar collectors for DHW heating in Poland
12	Dr Kung-Ming Chung	National Cheng Kung University, Taiwan	Solar water heaters for industrial processes.
13	Mr Nafeez Rahman	Dalarna University, Sweden	Sustainability analysis of net zero emission smart renewable hybrid system solution in Bangladesh rural context.

14	Mr Myeongchan Oh	Seoul National University, S Korea	Susceptibility analysis on solar energy of fixed vertical solar panels in urban area considering shading effect.
15	Ms Sharmin Akhter	Curtin University	Potential of Wind Energy in Bangladesh: Analysing wind speed data in different wind regions in Bangladesh.
16	Prof Maxime Mussard	Nazarbayev University, Kazakhstan	Development of tools for comparative study of solar cookers with heat storage.
17	Mr Basil Amuzu-Sefordzi	University of Western Australia	Socio-technical optimisation of renewable energy systems is sub-Saharan Africa: A challenge or an opportunity.
18	Dr Mohammad Arif	Deakin University, Australia.	Investigation for a Net-zero Emission Residential Building in Temperate Weather Condition.
19	Mr Mohammad Hayat	Murdoch University, Australia.	Investigation of optimum Feed-in tariff for Residential Rooftop PVs in Australian Electricity Market.
20	Mr Nugroho Adi Sasongko	Murdoch University, Australia.	Transitioning to Sustainable Use of Biofuel in Australia.
21	Mr Ashley Clifton	Deakin University, Australia	Relevance and Applicability of Standards in Wind Farm Collector Circuit Design Process and Balance of Plant Selection.
22	Prof Chul H Jo	Inha University, S.Korea	Numerical and experimental interaction analysis of multi arrayed horizontal axis tidal current turbines.
23	Ms Thu Trang Nguyen	KTH Royal Institute of Technology, Sweden	A Review on Technology Maturity and Economic Evaluation of Small Scale Energy Storage Technologies.
24	Mr Mohammad Arif	Deakin University, Australia	Impacts of Distributed Generators on the Protection System of Distribution Networks.
25	Dr Adrian James	University College London (Australia)	A policy-based multi-objective optimisation framework for residential distributed energy system design
26	Prof Pao-Hung Lin	National Taiwan University of Science and Technology	Hollow microsphere of molybdate and tungstate.
27	Mr Samuel Reed	University of Newcastle, Australia	Development of new high conductivity, high energy density Miscibility Gap Alloy (MGA) thermal storage materials.
28	Mr Nelson Jr Enano	University of New South Wales, Australia	Trade-offs on cost, reliability and emission in the high penetration of renewables in the Philippine electricity supply industry.
29	Dr Choon-Man Jang	Korea Institute of Civil Engineering and Building Technology	Performance Evaluation of a Vertical Axis Wind Turbine Using Real Time Measuring Wind Data.

30	Ms Gazinga Abdullah	Barbara Hardy Institute\University of South Australia	Techno-economic comparison between different systematically optimized standalone solar air-conditioning options for Australian 6-star home.
31	Ms Gazinga Abdullah	Barbara Hardy Institute\University of South Australia	Economic comparison between use of standalone photovoltaic subsystem or main grid electricity to operate solar standalone hot water fired small adsorption.
32	Mr Choel-Hwan Jeon	Korea Petroleum Quality & Distribution Authority(K-Petro)	Biodiesel Application from Microalgae Biomass for Transport fuel in Korea
34	Dr Tania Urmee	Murdoch University, Australia	Development of Energy Service Company (ESCO) Market to Promote Energy Efficiency Programs in Developing Countries.
35	Mr Sadewo Panghudi Luhur	Universitas Indonesia	The Use of Waste Water in Butcher Industry as A Culture Media of Electric-Producer Microbes through Microbial Fuel Cell (MFC)
36	Prof Jungsoo Park	Chosun University, S. Korea	Numerical prediction on fundamental effects of combustion characteristics under biogas fueled engine varying CO2 and H2
37	Dr Joakim Wren	Linköping University, Sweden	Energy recovery from cattle manure – feasibility of local small-scale electricity production and its implication on nutrient flows at farms in Sweden.
38	Prof José Luis Duomarco	AIU, Uraguay	Classification of Solar Domestic Hot Water Systems
39	Dr Joakim Wren	Linköping University, Sweden	Towards Education in Sustainability and Energy Engineering Based on Industry Needs
40	Mr Olumuyiwa	Central University of Technology, Free State Bloemfontein, South Africa	Optimal sizing of a grid tied micro-hydrokinetic-pumped hydro storage hybrid system using time-of-use tariffs.
41	Mr Vinay Kumar	JSMB Agrodevelopers Pvt Ltd	Biofuel from waste rice bran oil fatty acids using wheat husk as a sulfated heterogeneous acid catalyst.
42	SDr Siti Fauziah	Faculty of Engineering, International Islamic University, Malaysia	Modular Fuzzy and Ant Colony-based separate Blade pitch controller of a variable speed wind turbine in high wind speed region
43	Mrs Betty Niazov	Department of Chemical Engineering, Biotechnology and Materials, Ariel University, Israel	Development of bioethanol production from plant biomass
44	Ms Gazinga Fareik	Barbara Hardy Institute, University of South Australia	Economic feasibility of a standalone solar adsorption chiller in term of electricity operating cost for Australian homes