Evident I-REC Code for Electricity

SD-02: Technologies and Fuels

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I-REC

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1. Introduction

This document details the technology codes, fuel codes, and descriptions approved for the issuing of I-REC(E) certificates under the Evident Code for I-REC(Electricity). This document is correct at the date of issue. However, Evident may alter requirements for the issuing of I-REC(E) certificates without notice. Changes may be made where necessary for compliance with national legislation or to preserve the integrity of the I-REC(E) market.

Technology and fuel codes and their associated descriptions displayed within the Xpansiv I-REC Registry shall have precedence over those displayed within this document.

2. Technology Codes

2.1 Active Technology Codes

2.1.1 Solar

Code	Description
TC110	PV Ground mounted
TC120	PV Roof Mounted (single installation)
TC130	PV Floating
TC140	PV Aggregated
TC150	Solar Thermal Concentration
TC160	Group Solar Rooftop
TC120	PV Roof Mounted (single installation)
TC130	PV Floating

2.1.2 Wind

Code	Description
TC210	Onshore
TC220	Offshore

2.1.3 Hydroelectric

Code	Description
TC310	Dam
TC320	Run of river
TC330	Pumped Hydro Storage (Natural in-flow only)

2.1.4 Thermal

Code	Description
TC410	Combined cycle gas turbine with heat recovery: Non CHP
TC411	Combined cycle gas turbine with heat recovery: CHP
TC421	Steam turbine with back-pressure turbine (open cycle): Non CHP
TC422	Steam turbine with back-pressure turbine (open cycle): CHP
TC423	Steam turbine with condensation turbine (closed cycle): Non CHP
TC424	Steam turbine with condensation turbine (closed cycle): CHP
TC431	Gas turbine with heat recovery: Non CHP
TC432	Gas turbine with heat recovery: CHP
TC441	Internal combustion engine: Non CHP
TC442	Internal combustion engine: CHP
TC451	Micro-turbine: Non CHP
TC452	Micro-turbine: CHP
TC461	Stirling engine: Non CHP
TC462	Stirling engine: CHP

TC481	Steam engine: Non CHP
TC482	Steam engine: CHP
TC491	Organic Rankine cycle: Non CHP
TC492	Organic Rankine cycle: CHP

2.1.5 Fuel Cell

Code	Description
TC471	Fuel cell: Non CHP
TC472	Fuel cell: CHP

2.1.6 Nuclear

Code	Description
TC600	Nuclear: Unspecified
TC601	Nuclear: Breeder
TC602	Nuclear: Graphite reactor
TC603	Nuclear: Heavy-water reactor
TC604	Nuclear: Light water reactor

2.2 Technology Codes No Longer in Use

2.2.1 Solar

Code	Description
T010000	Solar: Unspecified
T010100	Solar: Photovoltaic: Unspecified
T010101	Solar: Photovoltaic: Classic silicon
T010102	Solar: Photovoltaic: Thin film
T010103	Solar: Photovoltaic: Aggregated
T010200	Solar: Concentration

2.2.2 Wind

Code	Description
T020000	Wind: Unspecified
T020001	Wind: Onshore
T020002	Wind: Offshore

2.2.3 Hydroelectric

Code	Description
T030000	Hydro-electric head installations: Unspecified
T030100	Hydro-electric head installations: Run-of-river head installation
T030200	Hydro-electric head installations: Storage head installation
T030300	Hydro-electric head installations: Pure pumped storage head installation
T030400	Hydro-electric head installations: Mixed pumped storage head
T040000	Marine: Unspecified
T040100	Marine: Tidal: Unspecified
T040101	Marine: Tidal: Onshore
T040102	Marine: Tidal: Offshore
T040200	Marine: Wave: Unspecified
T040201	Marine: Wave: Onshore
T040202	Marine: Wave: Offshore
T040300	Marine: Currents: Unspecified
T040400	Marine: Pressure: Unspecified

2.2.4 Thermal

Code	Description
T050000	Thermal: Unspecified: Unspecified
T050100	Thermal: Combined cycle gas turbine with heat recovery: Unspecified
T050101	Thermal: Combined cycle gas turbine with heat recovery: Non CHP
T050102	Thermal: Combined cycle gas turbine with heat recovery: CHP
T050200	Thermal: Steam turbine with back-pressure turbine (open cycle): Unspecified
T050201	Thermal: Steam turbine with back-pressure turbine (open cycle): Non CHP
T050202	Thermal: Steam turbine with back-pressure turbine (open cycle): CHP
T050300	Thermal: Steam turbine with condensation turbine (closed cycle): Unspecified
T050301	Thermal: Steam turbine with condensation turbine (closed cycle): Non CHP
T050302	Thermal: Steam turbine with condensation turbine (closed cycle): CHP
T050400	Thermal: Gas turbine with heat recovery: Unspecified
T050401	Thermal: Gas turbine with heat recovery: Non CHP
T050402	Thermal: Gas turbine with heat recovery: CHP
T050500	Thermal: Internal combustion engine: Unspecified
T050501	Thermal: Internal combustion engine: Non CHP
T050502	Thermal: Internal combustion engine: CHP
T050600	Thermal: Micro-turbine: Unspecified
T050601	Thermal: Micro-turbine: Non CHP
T050602	Thermal: Micro-turbine: CHP
T050700	Thermal: Stirling engine: Unspecified

T050701	Thermal: Stirling engine: Non CHP
T050702	Thermal: Stirling engine: CHP
T050900	Thermal: Steam engine: Unspecified
T050901	Thermal: Steam engine: Non CHP
T050902	Thermal: Steam engine: CHP
T051000	Thermal: Organic Rankine cycle: Unspecified
T051001	Thermal: Organic Rankine cycle: Non CHP
T051002	Thermal: Organic Rankine cycle: CHP

2.2.5 Fuel Cell

Code	Description
T050800	Thermal: Fuel cell: Unspecified
T050801	Thermal: Fuel cell: Non CHP
T050802	Thermal: Fuel cell: CHP

2.2.6 Other

Code	Description
T070000	Other

3. Fuel Codes

3.1 Active Fuel Codes

3.1.1 Solar

Code	Description
ES100	Solar
ES110	Group Solar Rooftop

3.1.2 Wind

Code	Description
ES200	Wind

3.1.3 Hydroelectric

Code	Description
ES300	Hydro-electric

3.1.4 Marine

Code	Description
ES410	Marine Tidal
ES420	Marine Wave
ES430	Marine Current
ES440	Marine Vertical Pressure

3.1.5 Biofuel

Code	Description
ES510	Biomass Solid: Municipal Waste
ES520	Biomass Solid: Industrial and commercial waste
ES530	Biomass Solid: Forestry products
ES540	Biomass Solid: Forestry by-products & waste
ES550	Biomass Solid: Animal fats
ES560	Biomass Solid: Agricultural products
ES570	Biomass Solid: Agricultural by-products & waste
ES610	Biomass Liquid: Municipal biodegradable waste
ES620	Biomass Liquid: Black liquor
ES630	Biomass Liquid: Pure plant oil
ES650	Biomass Liquid: Waste plant oil
ES660	Biomass Liquid: Refined vegetable oil: Other
ES670	Biomass Liquid: Biodiesel (mono-alkyl ester)
ES680	Biomass Liquid: Biogasoline (C6-C12 hydrocarbon)
ES710	Biogas: Landfill gas
ES720	Biogas: Sewage gas
ES730	Biogas: Gas from organic waste digestion
ES740	Biogas: Process gas: Biogenic

3.1.6 Nuclear

Code	Description
ES900	Nuclear: Unspecified
ES901	Nuclear: MOX
ES902	Nuclear: UOX
ES903	Nuclear: AGR

3.1.7 Co-fired

Code	Description
ES910	Co-fired with fossil: Municipal solid waste: Biomass fraction
ES920	Co-fired with fossil: Industrial and commercial waste: Biomass fraction
ES930	Co-fired with fossil: Waste wood
ES940	Co-fired with fossil: Forestry products
ES950	Co-fired with fossil: Forestry by-products & waste
ES960	Co-fired with fossil: Animal fats
ES970	Co-fired with fossil: Agricultural products biomass fraction
ES980	Co-fired with fossil: Agricultural by-products & waste biomass fraction
ES990	Co-fired with fossil: Solar thermal concentration

3.1.8 Other

Code	Description
ES810	Renewable heat: Geothermal
ES820	Renewable heat: Aerothermal
ES830	Renewable heat: Hydrothermal
ES840	Renewable heat: Biogenic process heat
ES850	Waste Heat: Industrial Process Fossil
ES860	Natural Gas

3.2 Fuel Codes No Longer in Use

3.2.1 Solar

Code	Description
F01040100	Renewable: Heat: Solar: Unspecified

3.2.2 Wind

Code	Description
F01050100	Renewable: Mechanical source or other: Wind

3.2.3 Hydroelectric

Code	Description
F01050200	Renewable: Mechanical source or other: Hydro & marine

3.2.4 Biofuel

Code	Description
F01010000	Renewable: Solid: Unspecified
F01010101	Renewable: Solid: Municipal waste: Biogenic
F01010201	Renewable: Solid: Industrial and commercial waste: Biogenic
F01010300	Renewable: Solid: Wood: Unspecified
F01010301	Renewable: Solid: Wood: Forestry products
F01010302	Renewable: Solid: Wood: Forestry by-products & waste
F01010400	Renewable: Solid: Animal fats
F01010500	Renewable: Solid: Biomass from agriculture: Unspecified
F01010501	Renewable: Solid: Biomass from agriculture: Agricultural products
F01010502	Renewable: Solid: Biomass from agriculture: Agricultural by-products & waste
F01020000	Renewable: Liquid: Unspecified
F01020100	Renewable: Liquid: Municipal biodegradable waste
F01020200	Renewable: Liquid: Black liquor
F01020300	Renewable: Liquid: Pure plant oil: Unspecified
F01020301	Renewable: Liquid: Pure plant oil: Rapeseed (Brassica napus L.)
F01020302	Renewable: Liquid: Pure plant oil: Sunflower (Helianthus anuus L.)
F01020303	Renewable: Liquid: Pure plant oil: Oil palm (Elaeis guineensis Jacq.)
F01020304	Renewable: Liquid: Pure plant oil: Coconut (Cocos nucifera L.)
F01020305	Renewable: Liquid: Pure plant oil: Yatropha
F01020400	Renewable: Liquid: Waste plant oil
F01020500	Renewable: Liquid: Refined vegetable oil: Unspecified
F01020501	Renewable: Liquid: Refined vegetable oil: Biodiesel (mono-alkyl ester)

F01020502	Renewable: Liquid: Refined vegetable oil: Biogasoline (C6-C12 hydrocarbon)
F01030000	Renewable: Gaseous: Unspecified
F01030100	Renewable: Gaseous: Landfill gas
F01030200	Renewable: Gaseous: Sewage gas
F01030300	Renewable: Gaseous: Agricultural gas: Unspecified
F01030301	Renewable: Gaseous: Agricultural gas: Pig manure
F01030302	Renewable: Gaseous: Agricultural gas: Cow manure
F01030303	Renewable: Gaseous: Agricultural gas: Chicken manure
F01030304	Renewable: Gaseous: Agricultural gas: Unspecified manure
F01030305	Renewable: Gaseous: Agricultural gas: Energy crops
F01030400	Renewable: Gaseous: Gas from organic waste digestion
F01030501	Renewable: Gaseous: Process gas: Biogenic

3.2.5 Fossil

Code	Description
F02000000	Fossil: Unspecified
F02010000	Fossil: Solid: Unspecified
F02010100	Fossil: Solid: Hard coal: Unspecified
F02010101	Fossil: Solid: Hard coal: Anthracite
F02010102	Fossil: Solid: Hard coal: Bituminous coal
F02010103	Fossil: Solid: Hard coal: Coking coal
F02010104	Fossil: Solid: Hard coal: Coke-oven coke
F02010105	Fossil: Solid: Hard coal: Lignite coke
F02010200	Fossil: Solid: Brown coal: Unspecified
F02010201	Fossil: Solid: Brown coal: Sub-bituminous coal

F02010202	Fossil: Solid: Brown coal: Lignite
F02010203	Fossil: Solid: Brown coal: Brown coal briquette
F02010204	Fossil: Solid: Brown coal: Peat briquette
F02010300	Fossil: Solid: Peat
F02010400	Fossil: Solid: Municipal waste
F02010500	Fossil: Solid: Industrial and commercial waste
F02010501	Fossil: Solid: Industrial and commercial waste: Non-renewable
F02020000	Fossil: Liquid: Unspecified
F02020100	Fossil: Liquid: Crude oil: Unspecified
F02020101	Fossil: Liquid: Crude oil: Shale oil
F02020200	Fossil: Liquid: Natural gas liquids (NGL)
F02020300	Fossil: Liquid: Petroleum products: Unspecified
F02020301	Fossil: Liquid: Petroleum products: Ethane
F02020302	Fossil: Liquid: Petroleum products: Naphtha
F02020303	Fossil: Liquid: Petroleum products: Aviation gasoline
F02020304	Fossil: Liquid: Petroleum products: Motor gasoline
F02020305	Fossil: Liquid: Petroleum products: Aviation turbine fuel
F02020306	Fossil: Liquid: Petroleum products: Other kerosene
F02020307	Fossil: Liquid: Petroleum products: Gas/diesel oil
F02020308	Fossil: Liquid: Petroleum products: Fuel oil, low-sulphur
F02020309	Fossil: Liquid: Petroleum products: Fuel oil, high-sulphur
F02020310	Fossil: Liquid: Petroleum products: Liquid Petroleum Gas
F02020311	Fossil: Liquid: Petroleum products: Orimulsion
F02020312	Fossil: Liquid: Petroleum products: Bitumen
F02020313	Fossil: Liquid: Petroleum products: Lubricants
F02020314	Fossil: Liquid: Petroleum products: Petroleum coke

F02020315	Fossil: Liquid: Petroleum products: Refinery Feedstock
F02030000	Fossil: Gaseous: Unspecified
F02030100	Fossil: Gaseous: Natural gas
F02030200	Fossil: Gaseous: Coal-derived gas: Unspecified
F02030201	Fossil: Gaseous: Coal-derived gas: Blast furnace gas
F02030202	Fossil: Gaseous: Coal-derived gas: Coke-oven gas
F02030300	Fossil: Gaseous: Petroleum products: Unspecified
F02030301	Fossil: Gaseous: Petroleum products: Propane
F02030302	Fossil: Gaseous: Petroleum products: Butane
F02030303	Fossil: Gaseous: Petroleum products: Refinery gas
F02030304	Fossil: Gaseous: Petroleum products: Chemical waste gas
F02030400	Fossil: Gaseous: Municipal gas plant
F02030500	Fossil: Gaseous: Process gas: Unspecified
F02030501	Fossil: Gaseous: Process gas: Carbon monoxide
F02030502	Fossil: Gaseous: Process gas: Methane
F02030503	Fossil: Gaseous: Process gas: Hydrogen (fossil sourced)
F02030504	Fossil: Gaseous: Process gas: Phosphor gas
F02030505	Fossil: Gaseous: Process gas: Oxy gas
F02040000	Fossil: Heat: Unspecified: Unspecified
F02040001	Fossil: Heat: Unspecified: Non-renewable
F02040101	Fossil: Heat: Process heat: Non-renewable
F04040100	Fossil: Heat: Process heat: Unspecified

3.2.6 Co-fired

Code	Description
F04010300	Co-fired with fossil: Solid: Wood: Unspecified
F04010301	Co-fired with fossil: Solid: Wood: Forestry products
F04010302	Co-fired with fossil: Solid: Wood: Forestry by-products and waste
F04010400	Co-fired with fossil: Solid: Animal fats
F04010500	Co-fired with fossil: Solid: Biomass from agriculture: Unspecified
F04010501	Co-fired with fossil: Solid: Biomass from agriculture: Agricultural products
F04010502	Co-fired with fossil: Solid: Biomass from agriculture: Agricultural by-products and waste
F02040100	Co-fired with fossil: Heat: Solar: Unspecified

3.2.7 Other

Code	Description
F01040200	Renewable: Heat: Geothermal: Unspecified
F01040201	Renewable: Heat: Geothermal: Conventional geothermal heat
F01040202	Renewable: Heat: Geothermal: Enhanced dry bed geothermal heat
F01040300	Renewable: Heat: Aerothermal
F01040400	Renewable: Heat: Hydrothermal
F01040501	Renewable: Heat: Process heat: Biogenic
F00000000	Unspecified
F01000000	Renewable: Unspecified
F01050000	Renewable: Mechanical source or other: Unspecified