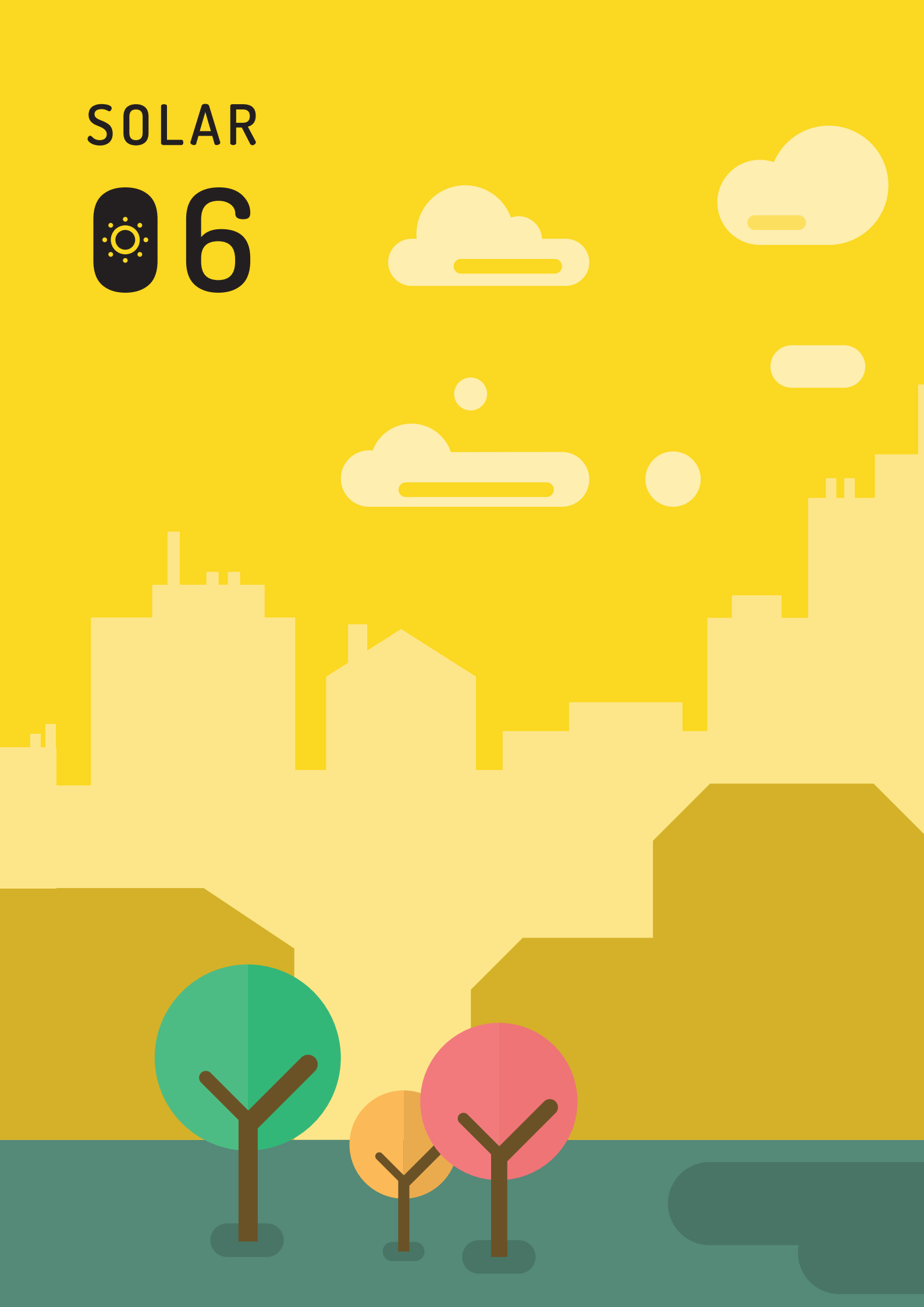

SOLAR
06

INSTALLED CAPACITY & NUMBER OF GRID-CONNECTED SOLAR PHOTOVOLTAIC (PV) SYSTEMS

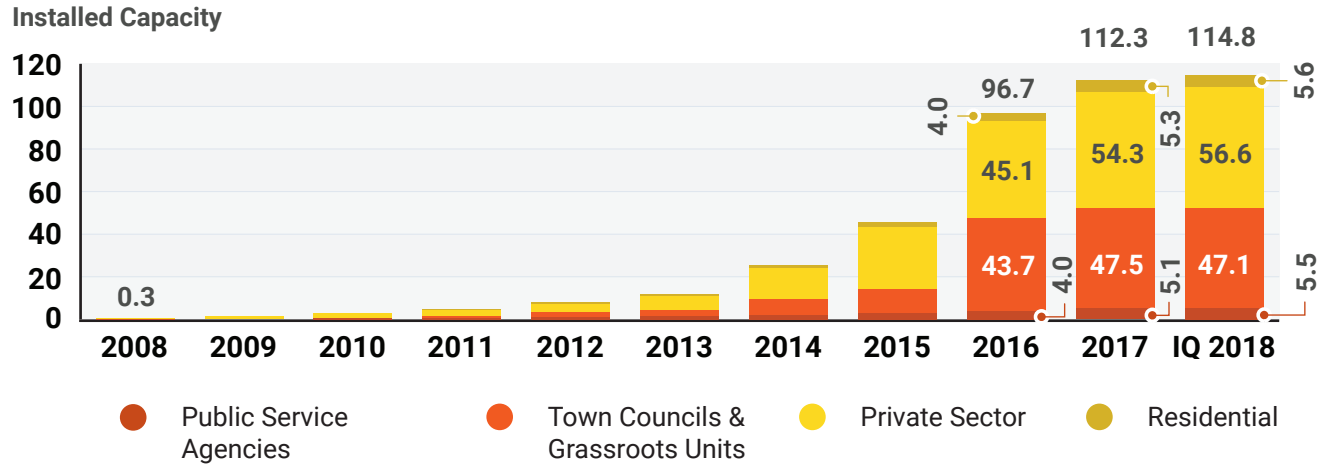
While grid-connected installed capacity grew sharply from 7.7 MWac in 2012 to 96.7 MWac in 2016, its growth had moderated recently and total installed capacity stood at 114.8 MWac in 1Q 2018. This is a reflection of current market conditions and commercial decisions by solar adopters. Nonetheless in the longer term, solar growth is likely to increase. The Housing & Development Board (HDB) and the Economic Development Board (EDB) are jointly spearheading the acceleration of the deployment of solar PV systems in Singapore through the SolarNova project, which was launched in 2014. As part of this effort, three solar leasing tenders have been called to-date. Singapore is expected to reach the committed solar PV capacity of 350 MWp via this project by 2020.

The majority of solar PV capacity as at end 1Q 2018 were accounted for by non-residential private sector installations (49.3% of total installed capacity or 56.6 MWac) and town councils & grassroots units (41.0% or 47.1 MWac). Residential installations (5.6 MWac) and installations by public service agencies (5.5 MWac) contributed to the remaining solar PV capacity.

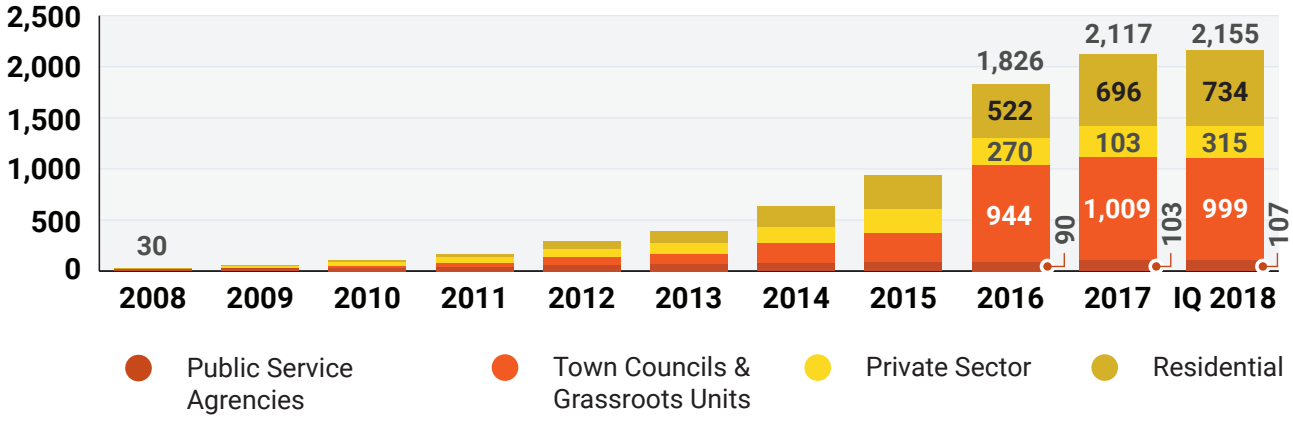
There were 2,155 solar PV installations as at end 1Q 2018. Town councils & grassroots units accounted for 46.4% (or 999 installations) of total installations, followed by the residential (34.1% or 734 installations) and private sectors (14.6% or 315 installations). Public service agencies constituted the remaining 5.0% (or 107 installations) of total installations.

SOLAR CAPACITY (AS AT END PERIOD)

Unit: MWac



NUMBER OF GRID-CONNECTED SOLAR PV INSTALLATIONS



SOLAR PV INSTALLATIONS BY PLANNING REGION

As at end 1Q 2018, the west region of Singapore had the highest solar PV capacity totalling 46.0 MWac from 456 installations. This was 40.1% of the total installed capacity of 114.8 MWac as at end of the same period. However, most solar PV systems were located in the north-east region (546 installations).

Close to half (52.7%) of PV systems in the north-east region were residential installations, which were significantly smaller in capacity. Hence, the installed capacity from this region (17.5 MWac or 15.2% of total capacity) was disproportionately smaller compared to its corresponding share of installed system (25.3%).

DISTRIBUTION OF SOLAR INSTALLATIONS IN SINGAPORE, 1Q 2018

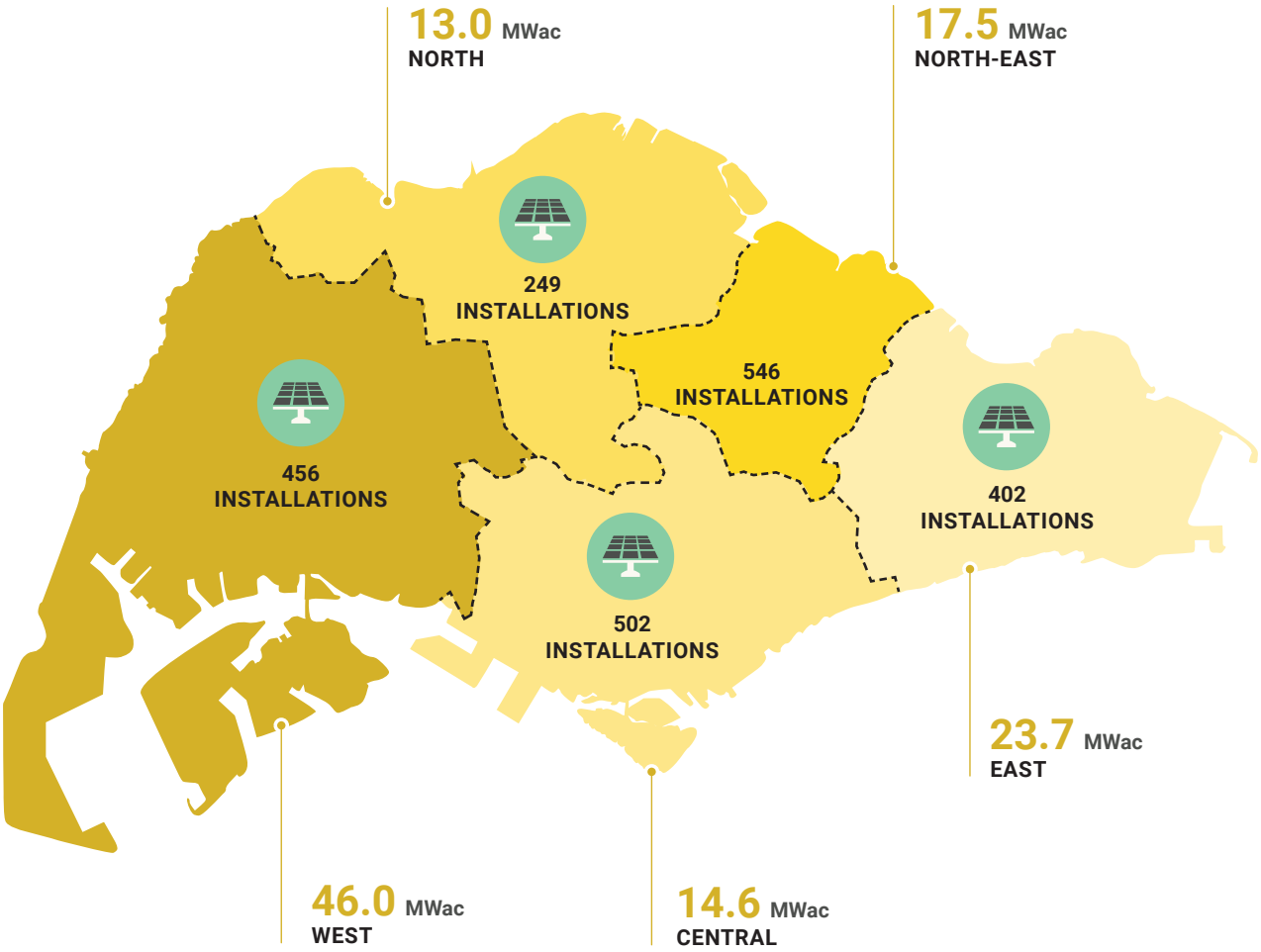


TABLE 6.1: INSTALLED CAPACITY OF GRID-CONNECTED SOLAR PHOTOVOLTAIC (PV) SYSTEMS BY USER TYPE

Unit: MWp

	2010	2014	2015	2016	2017	1Q 2018
Total	**3.8**	**33.1**	**59.5**	**125.6**	**145.8**	**149.1**
Residential	**0.1**	**2.0**	**3.6**	**5.2**	**6.9**	**7.3**
Non-Residential	**3.7**	**31.1**	**55.9**	**120.4**	**138.9**	**141.8**
Public Service Agencies	0.7	2.9	3.8	5.2	6.6	7.1
Town Councils & Grassroots Units	0.5	9.3	14.9	56.7	61.7	61.1
Private Sector	2.6	18.9	37.2	58.5	70.6	73.5

Source: SP PowerGrid Ltd (SPPG)

Unit: MWac

	2010	2014	2015	2016	2017	1Q 2018
Total	**2.9**	**25.5**	**45.8**	**96.7**	**112.3**	**114.8**
Residential	**0.1**	**1.5**	**2.8**	**4.0**	**5.3**	**5.6**
Non-Residential	**2.9**	**23.9**	**43.0**	**92.7**	**107.0**	**109.2**
Public Service Agencies	0.5	2.2	2.9	4.0	5.1	5.5
Town Councils & Grassroots Units	0.4	7.2	11.5	43.7	47.5	47.1
Private Sector	2.0	14.5	28.7	45.1	54.3	56.6

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWp refers to megawatt-peak, which is a typical measure of the installed nameplate capacity for solar PV systems. MWp represents the amount of electric power that can be produced by a solar PV system at its peak under Standard Test Conditions (STC).
b. MWac refers to the Alternating Current (ac) capacity of the inverters used in solar PV installations.

TABLE 6.2: INSTALLED CAPACITY OF GRID-CONNECTED SOLAR PHOTOVOLTAIC (PV) SYSTEMS BY CONTESTABILITY

Unit: MWp

	2010	2014	2015	2016	2017	1Q 2018
Total	**3.8**	**33.1**	**59.5**	**125.6**	**145.8**	**149.1**
Residential	**0.1**	**2.0**	**3.6**	**5.2**	**6.9**	**7.3**
Non-Residential	**3.7**	**31.1**	**55.9**	**120.4**	**138.9**	**141.8**
Contestable	1.8	16.6	31.3	42.9	51.5	54.3
Non-Contestable	1.9	14.5	24.6	77.5	87.4	87.5

Source: SP PowerGrid Ltd (SPPG)

Unit: MWac

	2010	2014	2015	2016	2017	1Q 2018
Total	**2.9**	**25.5**	**45.8**	**96.7**	**112.3**	**114.8**
Residential	**0.1**	**1.5**	**2.8**	**4.0**	**5.3**	**5.6**
Non-Residential	**2.9**	**23.9**	**43.0**	**92.7**	**107.0**	**109.2**
Contestable	1.4	12.8	24.1	33.0	39.7	41.8
Non-Contestable	1.4	11.2	18.9	59.7	67.3	67.3

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWp refers to megawatt-peak, which is a typical measure of the installed nameplate capacity for solar PV systems. MWp represents the amount of electric power that can be produced by a solar PV system at its peak under Standard Test Conditions (STC).
b. MWac refers to the Alternating Current (ac) capacity of the inverters used in solar PV installations.

TABLE 6.3: NUMBER OF GRID-CONNECTED SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY USER TYPE

Unit: MWp

	2010	2014	2015	2016	2017	1Q 2018
Total	**106**	**635**	**941**	**1,826**	**2,117**	**2,155**
Residential	**16**	**203**	**337**	**522**	**696**	**734**
Non-Residential	**90**	**432**	**604**	**1,304**	**1,421**	**1,421**
Public Service Agencies	31	77	85	90	103	107
Town Councils & Grassroots Units	14	193	286	944	1009	999
Private Sector	45	162	233	270	309	315

Source: SP PowerGrid Ltd (SPPG)

TABLE 6.4: NUMBER OF GRID-CONNECTED SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY CONTESTABILITY

	2010	2014	2015	2016	2017	1Q 2018
Total	**106**	**635**	**941**	**1,826**	**2,117**	**2,155**
Residential	**16**	**203**	**337**	**522**	**696**	**734**
Non-Residential	**90**	**432**	**604**	**1,304**	**1,421**	**1,421**
Contestable	32	121	172	205	239	245
Non-Contestable	58	311	432	1,099	1,182	1,176

Source: SP PowerGrid Ltd (SPPG)

TABLE 6.5: SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY PLANNING REGION

Planning Region	Residential Status	Number of Solar PV Installations	Installed Capacity (kWac)	Percentage Share (of Total Installed Capacity)
		2010		
	Non-Residential	90	2,862.2	97.8%
Overall	Residential	16	63.0	2.2%
	Total	**106**	**2,925.2**	**100.0%**
	Non-Residential	30	994.3	34.0%
Central	Residential	9	35.4	1.2%
	Sub-Total	**39**	**1,029.7**	**35.2%**
	Non-Residential	14	835.7	28.6%
East	Residential	2	9.7	0.3%
	Total	**16**	**845.4**	**28.9%**
	Non-Residential	15	140.8	4.8%
North-East	Residential	3	14.2	0.5%
	Sub-Total	**18**	**155.0**	**5.3%**
	Non-Residential	12	210.6	7.2%
North	Residential	2	3.7	0.1%
	Total	**14**	**214.3**	**7.3%**
	Non-Residential	19	680.8	23.3%
West	Residential	-	-	0.0%
	Sub-Total	**19**	**680.8**	**23.3%**

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWac refers to the Alternating Current (AC) capacity of the inverters used in solar PV installations.

TABLE 6.5: SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY PLANNING REGION (CONTINUED)

Planning Region	Residential Status	Number of Solar PV Installations	Installed Capacity (kWac)	Percentage Share (of Total Installed Capacity)
2014				
	Non-Residential	432	23,936.3	93.9%
Overall	Residential	203	1,546.7	6.1%
	Total	**635**	**25,483.0**	**100.0%**
	Non-Residential	113	3,907.6	15.3%
Central	Residential	83	765.2	3.0%
	Sub-Total	**196**	**4,672.8**	**18.3%**
	Non-Residential	47	3,006.3	11.8%
East	Residential	49	335.7	1.3%
	Total	**96**	**3,342.0**	**13.1%**
	Non-Residential	148	6,111.0	24.0%
North-East	Residential	51	323.9	1.3%
	Sub-Total	**199**	**6,434.9**	**25.3%**
	Non-Residential	28	2,484.0	9.7%
North	Residential	8	38.8	0.2%
	Total	**36**	**2,522.8**	**9.9%**
	Non-Residential	96	8,427.4	33.1%
West	Residential	12	83.1	0.3%
	Sub-Total	**108**	**8,510.5**	**33.4%**
2015				
	Non-Residential	604	43,048.1	93.9%
Overall	Residential	337	2,782.1	6.1%
	Total	**941**	**45,830.2**	**100.0%**
	Non-Residential	165	7,120.6	15.5%
Central	Residential	131	1,234.3	2.7%
	Sub-Total	**296**	**8,354.9**	**18.2%**
	Non-Residential	72	8,022.6	17.5%
East	Residential	74	542.5	1.2%
	Total	**146**	**8,565.1**	**18.7%**
	Non-Residential	158	7,471.1	16.3%
North-East	Residential	90	676.3	1.5%
	Sub-Total	**248**	**8,147.4**	**17.8%**
	Non-Residential	47	4,083.2	8.9%
North	Residential	20	147.0	0.3%
	Total	**67**	**4,230.2**	**9.2%**
	Non-Residential	162	16,350.6	35.7%
West	Residential	22	182.0	0.4%
	Sub-Total	**184**	**16,532.6**	**36.1%**

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWac refers to the Alternating Current (AC) capacity of the inverters used in solar PV installations.

TABLE 6.5: SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY PLANNING REGION (CONTINUED)

Planning Region	Residential Status	Number of Solar PV Installations	Installed Capacity (kWac)	Percentage Share (of Total Installed Capacity)
2016				
	Non-Residential	1,304	92,695.4	95.9%
Overall	Residential	522	3,979.9	4.1%
	Total	**1,826**	**96,675.3**	**100.0%**
	Non-Residential	232	10,028.7	10.4%
Central	Residential	173	1,721.0	1.8%
	Sub-Total	**405**	**11,749.7**	**12.2%**
	Non-Residential	253	19,984.9	20.7%
East	Residential	105	822.1	0.9%
	Total	**358**	**20,807.0**	**21.5%**
	Non-Residential	267	14,168.5	14.7%
North-East	Residential	188	961.4	1.0%
	Sub-Total	**455**	**15,129.9**	**15.7%**
	Non-Residential	206	12,014.7	12.4%
North	Residential	25	202.5	0.2%
	Total	**231**	**12,217.2**	**12.6%**
	Non-Residential	346	36,498.6	37.8%
West	Residential	31	272.9	0.3%
	Sub-Total	**377**	**36,771.5**	**38.0%**
2017				
	Non-Residential	1,421	106,966.7	95.3%
Overall	Residential	696	5,292.7	4.7%
	Total	**2,117**	**112,259.4**	**100.0%**
	Non-Residential	252	11,699.7	10.4%
Central	Residential	231	2,411.8	2.1%
	Sub-Total	**483**	**14,111.5**	**12.6%**
	Non-Residential	268	21,948.8	19.6%
East	Residential	126	995.3	0.9%
	Total	**394**	**22,944.1**	**20.4%**
	Non-Residential	284	15,778.3	14.1%
North-East	Residential	273	1,325.5	1.2%
	Sub-Total	**557**	**17,103.8**	**15.2%**
	Non-Residential	220	12,746.3	11.4%
North	Residential	28	232.7	0.2%
	Total	**248**	**12,979.0**	**11.6%**
	Non-Residential	397	44,793.6	39.9%
West	Residential	38	327.4	0.3%
	Sub-Total	**435**	**45,121.0**	**40.2%**

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWac refers to the Alternating Current (AC) capacity of the inverters used in solar PV installations.

TABLE 6.5: SOLAR PHOTOVOLTAIC (PV) INSTALLATIONS BY PLANNING REGION (CONTINUED)

Planning Region	Residential Status	Number of Solar PV Installations	Installed Capacity (kWac)	Percentage Share (of Total Installed Capacity)
		1Q 2018		
Overall	Non-Residential	1,421	109,186.0	95.1%
	Residential	734	5,630.8	4.9%
	Total	**2,155**	**114,816.8**	**100.0%**
Central	Non-Residential	258	12,000.4	10.5%
	Residential	244	2,587.0	2.3%
	Sub-Total	**502**	**14,587.4**	**12.7%**
East	Non-Residential	271	22,672.7	19.7%
	Residential	131	1,042.7	0.9%
	Total	**402**	**23,715.4**	**20.7%**
North-East	Non-Residential	258	16,076.5	14.0%
	Residential	288	1,406.1	1.2%
	Sub-Total	**546**	**17,482.6**	**15.2%**
North	Non-Residential	221	12,749.6	11.1%
	Residential	28	232.7	0.2%
	Total	**249**	**12,982.3**	**11.3%**
West	Non-Residential	413	45,686.8	39.8%
	Residential	43	362.3	0.3%
	Sub-Total	**456**	**40,409.1**	**40.1%**

Sources: SP PowerGrid Ltd (SPPG) & Energy Market Authority (EMA)

Notes:
a. MWac refers to the Alternating Current (AC) capacity of the inverters used in solar PV installations.