

Chapter 7.

Infrastructure Sector

Infrastructure and Utilities

Infrastructure refers to the basic physical and organizational structures needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. It can be generally defined as the set of interconnected structural elements that provide a framework supporting an entire structure of development. The term typically refers to the technical structures that support a society, such as roads, bridges, water supply, sewers, electrical grids, telecommunications, and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions (Wikipedia)".

Road Transport

The transportation system in the province of Cavite is predominantly land-based, of which the main transport mode is road-based. The roads are classified into national, provincial, city/municipal, and barangay roads. The national roads form part of the trunkline systems and are connected by provincial roads from one city/municipality to another, and the city/municipal roads interlink barangays.

The province is accessible by various land-based vehicles from Manila and other nearby provinces and cities. It may be reached through public utility jeepneys and buses taking the major entrances and exits: the Aguinaldo Boulevard (Manila-Cavite Coastal Road) via Coastal Road Extension and via Talaba, Bacoor, South Luzon

Expressway (SLEX) in Carmona, the Aguinaldo Highway (Batangas-Alfonso-Tagaytay Road), the Zapote-Las Piñas Road, the Sta. Rosa-Tagaytay Road, and the Alabang-Molino via DaangHari Road.

In 2011, the Cavite Expressway (CAVITEX) was opened, which lessened the heavy volume of vehicles on Aguinaldo. Last July 1, 2013, the Kaybiang Tunnel, the country's longest underground highway tunnel at 300 meters was opened along the Ternate-Nasugbu Road piercing through Mt. Pico De Loro's north ridge that shortens the travel time from Manila to the western coves of Cavite and Nasugbu, Batangas (Wikipedia).

Roads and Bridges

Based on the 2013 data, the province's road network comprised about 2,143.0459 kilometers, of which about 19.14% or 410.0930 kilometers were classified as national roads, while 369.6810 kilometers or 17.25% are provincial roads. Furthermore, city/municipal roads comprised 12.47% or 267.2256 kilometers and about 51.14% or 1,096.0463 kilometers are barangay roads. By surface type, it is noted that 64.78% or 1,388.3235 kilometers of these roads are paved with concrete while 314.5107 kilometers or 14.68% are paved with asphalt. In addition, unpaved roads comprised 20.54% or 440.2117 kilometers (Table 7A).

Bridge connects roads in different cities and municipalities of the province. These are also classified as to national, provincial, city/municipal and barangay. Length totaled to 6,566.4 linear meters.

Motor Vehicle Registration

Registered motor vehicles are classified into cars, utility vehicles (UV), sports utility vehicle (SUV), trucks, buses, motorcycles/tricycles and trailers and its registration is under the jurisdiction of the Land Transportation Office (LTO), being the agency of the Philippine government that handles all matters regarding license for drivers, car registration, renewal of these documents and more, which comprise all sorts of land transportation vehicles (www.ltophilippines.com).

The total number of registered motor vehicles in Cavite reached 246,919 units and based on the data gathered from LTO, Region IV-A in Lipa City, Batangas, among the four (4) Land Transportation Offices in the province, the highest registration was recorded at Kawit District Office with 32.34% or 79,865 units followed by Imus District Office having 72,722 units or 29.45%. Meanwhile, Tagaytay City Extension Office recorded a total of 48,277 units or 19.55% while Dasmariñas Extension Office has a total registration of 46,055 units or 18.65% share. It was also noted that the highest registered number of motor vehicles was motorcycles/tricycles with 52.59% of the total or 129,855 units followed by utility vehicles with 27.65% or 68,264 units while the least registration was trailers with only 0.07% or 178 units (Table 7B).

Table 7A Total Length of Roads and Bridges by Classification Province of Cavite: 2013

Road/Bridge Classification	Road				Length	
	Paved		Unpaved		Road (km)	Bridge (lm)
	Concrete	Asphalt	Gravel	Earth fill		
National	207.7201	202.3729			410.0930	3,001.0
Provincial	280.7100	44.9820	43.9890		369.6810	1,078.1
City/Municipal	213.6963	43.5276	0.1000	9.9017	267.2256	889.7
Barangay	686.1971	23.6282	106.117	280.1038	1,096.0463	1,597.6
Total	1,388.3235	314.5107	150.2062	290.0055	2,143.0459	6,566.4

Source: Special Projects Division, PPDO, Trece Martires City

Table 7B Number of Registered Motor Vehicles by Type, Province of Cavite: 2014

Type of Vehicle	Number of Vehicle Registration				Total
	Imus District Office	Kawit District Office	Tagaytay City Extension Office	Dasmariñas Extension Office	
Cars	12,510	8,490	8,533	5,697	35,230
Utility Vehicles	22,455	19,685	17,030	9,114	68,284
Sports Utility Vehicles	3,450	2,637	2,127	1,419	9,633
Trucks	913	1,076	938	290	3,217
Buses	19	409	77	17	522
Motorcycles/ Tricycles	33,30	47,49			
Trailers	1	1	19,555	29,508	129,855
	74	77	17	10	178
Total	72,722	79,865	48,277	46,055	246,919

Source: Land Transportation Office, Region IV-A Lipa City, Batangas

Licenses

A driver's license is an official document authorizing an individual to drive a motorized vehicle in the Philippines. The Land Transportation Office issues three types of driver's licenses: student permit, non-professional and professional

Table 7D Number of Driver's License & Conductors Permit Issued by District Office Province of Cavite: 2014

Agency	Driver's License								Conductors Permit			Total Licenses & Permit Issued
	Professional			Non-Professional			Student Permit	Total	New	Renewal	Total	
	New	Renewal	Sub-Total	New	Renewal	Sub-Total	New					
Tagaytay City Extension Office	4,512	17,045	21,557	9,492	8,845	18,337	12,765	52,659	102	184	286	52,945
Imus District Office		14,835	14,835		14,246	14,246	20,728	49,809		26	26	49,835
Dasmariñas Extension Office		11,539	11,539	20	8,973	8,993	14,983	35,515		29	29	35,544
Kawit Licensing Center	3,325	18,242	21,567	14,299	10,886	25,185	17,637	64,389	118	83	201	64,590
Total	7,837	61,661	69,498	23,811	42,950	66,761	66,113	202,372	220	322	542	202,914

Source: Land Transportation Office, Region IV-A, Lipa City, Batangas

driver's license. Conductors permit was also being issued by LTO.

The data on license and permit issued are classified according to the type of application, namely new and renewal. As illustrated in Table 7C, out of 202,914 issuances, 48.29% or 97,981 are new applications while 51.71% or 104,933 applied for renewal.

Moreover, out of the total issuances, 202,372 are driver's license and 542 are conductors permit. It is indicated that Kawit Licensing Center posted the highest license and permit issuance with 64,590 or 31.83% share, followed by Tagaytay City Extension Office with 26.09% issuances or 52,945 while Imus District Office has 49,835 or 24.56%. The least number of issuances with 17.52% or 35,544 was registered at Dasmariñas Extension Office (Table 7D). The table also shows that of the three types of driver's license, professional license has the most number of issuances with 69,498 or 34.34% share while non-professional licenses were registered at 32.99% or 66,761 issuances. In addition, student permit were posted at 66,113 or 32.67% share.

Table 7C Number of License & Permit Issued by Classification, Province of Cavite: 2014

Agency	License & Permit Issued		Total
	New	Renewal	
Tagaytay City Extension Office	26,871	26,074	52,945
Imus District Office	20,728	29,107	49,835
Dasmariñas Extension Office	15,003	20,541	35,544
Kawit Licensing Center	35,379	29,211	64,590
Total	97,981	104,933	202,914

Source: Land Transportation Office, Region IV-A Lipa City, Batangas

Communication

Communication is the sending and receiving of spoken or written messages between people and places. People communicate with each other by writing letters, sending telegrams, radio, television, computer technology, newspapers, magazines and pamphlets; messages can be sent by telegram, facsimile machine (FAX) and E-mail (Electronic mail) for business trade and other services. Having an access to information is an advantage towards the success of any business endeavor thus these services are useful to the populace to be updated with the current issues, global trends and developments.

Based on record from National Telecommunications Commission (NTC), Region IV-A, Batangas City, telephone services, being one of the fastest means of communication are mostly being provided by Philippine Long Distance Telephone Company (PLDT), Digital Telecommunications Philippines, Inc. (DIGITEL) and Bell Tel. As published on April 29, 2013, the migration of the landline subscribers of Digitel to its parent company PLDT is being undertaken in order to ensure that Digitel subscribers will continue to be served and with better quality and wider range of services (www.pldt.com).

In addition, cellular mobile telephone system providers are Smart Communications, Inc., Globe Telecom, Inc. and Digitel Mobile Philippines with 722 cell sites located provincewide (Table 7E).

Table 7E Cellular Mobile Telephone System (CMTS) Providers, Province of Cavite: 2014

Name of Company	Number of Cell sites
Smart Communications, Inc.	137
Globe Telecom, Inc.	275
Digitel Mobile Phils., Inc.	310
Total	722

Source: National Telecommunications Commission Region IV-A, Batangas City

Over the past decades, radio has also proven to be an effective development communication channel. Radio is also acknowledged as the primary source of news and the most pervasive, persuasive, and credible medium (www.ncca.gov.ph). As presented in Tables 7F & 7G, there are two (2) radio stations operating, the Delta Broadcasting Company and De La Salle University while there are radio groups that help the community especially at times of disasters, one of which is the Public Assistance for Rescue, Disaster & Support Services (PARDSS) Foundation International, Inc.

Table 7F Operating Radio Stations Province of Cavite: 2014

Operating Agency	Transmitter & Studio	Call-Sign
I. AM BROADCASTING Delta Broadcasting System	Manila-Cavite Road, San Rafael III, Noveleta	DWXI - AM
II. FM BROADCASTING De La Salle University	JFH Building, DLSU Campus, City of Dasmariñas, Cavite	DWSU - FM

Table 7G Registered Radio Groups and Location of Base Stations, Province of Cavite: 2014

Name of Group/Club	Location of Base Station
I. Amateur Radio Group Cavite Amateur Communication Enthusiast, Inc. (DXI-ACE)	Alvaran Compound, St. Charbel, South Executive VII, City of Dasmariñas, Cavite
II. Civic Radio Group 79 CBR Civic Radio Group, Inc.	Blk3 Lot20 St. Martin de Porres Villa, Bayan Luma, Imus, Cavite
Kabalikat Civicom, Inc. (Cavite Provincial Council)	Daang Bukid, City of Bacoor, Cavite; Q. Trinidad Avenue, Sta. Lucia, City of Dasmariñas
Concerned Brotherhood Comm. Group, Inc.	179 Ligas II, City of Bacoor; Blk4 Lot10 GreenTown Villas 2, Bayanan, City of Bacoor
Kabalikat Civicom, Inc. (Cavite Chapter)	Blk4 Lot36, Poblacion I, Gen. Mariano Alvarez, Cavite
Pugad Lawin sa Imus, Cavite	Pugad Lawin Bldg., City of Imus, Cavite
UMCRC Sagip Ilog Volunteer Association, Inc.	Blk 41, Lot 15 Datu Esmael, City of Dasmariñas, Cavite
PARDSS Foundation International, Inc. (Maragondon & Ternate Chapter)	Maragondon & Ternate

Source: National Telecommunications Commission Region IV-A, Batangas City

Records from Philippine Postal Corporation, Office of the Postmaster General, Manila indicates that although letter writing is not anymore popular today, there are still domestic and international mails being handled by post offices located in every city/municipality of the province (Tables 7H & 7I). It is noted that the municipality of Gen. E. Aguinaldo received their letters thru the municipality of Alfonso while the letters for the municipalities of Magallanes, Maragondon and Ternate are delivered at Naic. As defined, posted mails are mails received from windows, counters, lobby drop boxes and street boxes while delivered mails are mails distributed in the locality through letter carriers through the use of post office (P.O.) boxes (www.nscb.gov.ph).

Table 7H Number of Mails Posted by Post Offices Province of Cavite: 2014

City/Municipality/Post Office	Posted		Total
	Domestic	Inter-national	
1st District	61,436	2,901	64,337
Cavite City Post Office	22,415	1,592	24,007
Kawit Post Office	29,185	275	29,460
Noveleta Post Office	3,129	563	3,692
Rosario Post Office	6,707	471	7,178
2nd District	124,047	2,196	126,243
City of Bacoor Post Office	108,559	942	109,501
Molino Post Office	15,488	1,254	16,742
3rd District	166,411	13,347	179,758
City of Imus Post Office	166,411	13,347	179,758
4th District	48,318	1,974	50,292
City of Dasmariñas Central Market Post Office	48,318	1,974	50,292
5th District	80,488	3,329	83,817
Carmona Post Office	17,140	714	17,854
Gen. Mariano Alvarez Post Office	4,768	556	5,324
Silang Post Office	58,580	2,059	60,639
6th District	46,258	3,263	49,521
Amadeo Post Office	533	62	595
Gen. Trias Post Office	14,560	1,500	16,060
Manggahan Post Office	12,863	476	13,339
Tanza Post Office	11,050	1,070	12,120
Trece Martires City Post Office	7,252	155	7,407
7th District	102,775	4,326	107,101
Alfonso Post Office	16,715	1,780	18,495
Indana Post Office	7,140	249	7,389
Naic Post Office	9,861	981	10,842
Mendez Post Office	947	264	1,211
Tagaytay City Post Office	68,112	1,052	69,164
Total	629,733	31,336	661,069

Source: Philippine Postal Corporation, Office of the Postmaster General, Manila

Table 7I Number of Mails Delivered by Post Offices Province of Cavite: 2014

Post Office	Delivered		Total
	Domestic	Inter-national	
1st District	410,290	43,680	453,970
Cavite City Post Office	108,888	18,589	127,477
Kawit Post Office	11,472		11,472
Noveleta Post Office	14,242	5,354	19,596
Rosario Post Office	275,688	19,737	295,425
2nd District	1,175,886	35,436	1,211,322
City of Bacoor Post Office	721,273	21,181	742,454
Molino Post Office	454,613	14,255	468,868
3rd District	1,090,532	21,863	1,112,395
City of Imus Post Office	1,090,532	21,863	1,112,395
4th District	748,099	24,876	772,975
City of Dasmariñas Central Market Post Office	748,099	24,876	772,975
5th District	874,313	23,453	897,766
Carmona Post Office	99,148	11,024	110,172
Gen. Mariano Alvarez Post Office	127,358	2,753	130,111
Silang Post Office	647,807	9,676	657,483
6th District	984,854	33,557	1,018,411
Amadeo Post Office	57,853	2,501	60,354
Gen. Trias Post Office	155,504	7,864	163,368
Manggahan Post Office	172,843	9,120	181,963
Tanza Post Office	547,404	12,846	560,250
Trece Martires City Post Office	51,250	1,226	52,476
7th District	974,387	30,740	1,005,127
Alfonso Post Office	55,270	1,595	56,865
Indang Post Office	85,996	3,766	89,762
Naic Post Office	347,364	17,666	365,030
Mendez Post Office	32,567	1,879	34,446
Tagaytay City Post Office	453,190	5,834	459,024
Total	6,258,361	213,605	6,471,966

Source: Philippine Postal Corporation, Office of the Postmaster General, Manila

Power

The electric power of the entire province of Cavite is being supplied by the National Power Corporation (NPC) through the Manila Electric Company (MERALCO). All towns down to all barangays of Cavite have access to electric power supplied by MERALCO, thus giving the province's energization rate of 100%.

Data gathered from this agency shows a total of 771,262 electrical connections wherein residential users account to the largest share of 93.49% or 721,020 connections followed by 48,833 or 6.33% connections for commercial users. Meanwhile, out of the total connections, the City of Dasmariñas has the most number of users with 140,877, followed by the Cities of Bacoor and Imus with 116,050 and 106,936 connections, respectively (Table 7.J). Furthermore, the annual electricity consumption by city/municipality was presented in Table 7K.

Table 7L shows the existing substation in the province and its location. A substation is a part of an electrical generation, transmission, and distribution system. Substations transform voltage from high to low, or the reverse, or perform any of several other important functions. Between the generating station and consumer, electric power may flow through several substations at different voltage levels (*Wikipedia*).

Meralco's electric capital projects (ECPs) were designed to meet growth in power demand and enhance customer experience, as well as improve the distribution system ensuring reliability, power quality, and resiliency in the face of natural calamities and other contingencies (www.manilatimes.net).

The details of 2014 electric capital projects for the province of Cavite is shown in Table 7M.

Table 7J Number of Electrical Connections by Type of Users, Province of Cavite: 2014

City/Municipality	Number of Electrical Connections by Type of Users				
	Res	Com	Incl	Street light	Total
1st District	63,051	6,065	14	35	69,165
Cavite City	18,322	1,851	2	2	20,177
Kawit	17,409	1,756	7	22	19,194
Noveleta	9,751	918		7	10,676
Rosario	17,569	1,540	5	4	19,118
2nd District	108,286	7,575	43	146	116,050
City of Bacoor	108,286	7,575	43	146	116,050
3rd District	100,407	6,393	41	95	106,936
City of Imus	100,407	6,393	41	95	106,936
4th District	132,145	8,470	142	120	140,877
City of Dasmariñas	132,145	8,470	142	120	140,877
5th District	88,805	6,011	294	96	95,206
Carmona Gen.	20,224	1,563	194	40	22,021
Mariano Alvarez	23,858	1,246	9	11	25,124
Silang	44,723	3,202	91	45	48,061
6th District	146,774	7,727	106	145	154,752
Amadeo	6,614	381	1		6,996
General	69,520	3,062	60	80	72,722
Tanza	41,266	2,856	14	48	44,184
Trece Martires City	29,374	1,428	31	17	30,850
7th District	81,552	6,592	13	119	88,276
Alfonso Gen.	10,603	943	2	13	11,561
Aguinaldo	3,301	200	1		3,502
Indang	12,392	868	2	5	13,267
Magallanes	3,287	197		6	3,490
Maragondon	5,578	482			6,060
Mendez	6,002	405		3	6,410
Naic	19,408	1,445	5	29	20,887
Tagaytay City	17,889	1,882	2	61	19,834
Terate	3,092	170	1	2	3,265
Total	721,020	48,833	653	756	771,262

Source: Manila Electric Company (Meralco) Ortigas Avenue, Pasig City

Table 7K Annual Electricity Consumption by City/Municipality
Province of Cavite: 2014

City/ Municipality	Electricity Consumption (kWh)				
	Residential	Commercial	Industrial	Streetlight	Total
1st District	110,037,281	76,301,449	466,615,783	1,141,771	654,096,284
Cavite City	34,348,814	25,831,880	21,697	744,384	60,946,775
Kawit	30,460,420	18,559,051	227,926	286,264	49,533,661
Noveleta	17,127,624	7,741,752		87,840	24,957,216
Rosario	28,100,423	24,168,766	466,366,160	23,283	518,658,632
2nd District	241,648,681	120,531,593	10,811,111	2,230,224	375,221,609
City of Bacoor	241,648,681	120,531,593	10,811,111	2,230,224	375,221,609
3rd District	187,861,218	101,938,271	92,498,091	1,364,533	383,662,113
City of Imus	187,861,218	101,938,271	92,498,091	1,364,533	383,662,113
4th District	200,057,721	163,034,779	167,868,217	2,257,478	533,218,195
City of Dasmariñas	200,057,721	163,034,779	167,868,217	2,257,478	533,218,195
5th District	128,636,578	95,225,169	478,801,351	1,698,101	704,361,199
Carmona	31,895,785	31,960,541	416,742,592	715,220	481,314,138
Gen. Mariano Alvarez	34,099,616	15,562,230	1,774,514	175,487	51,611,847
Silang	62,641,177	47,702,398	60,284,245	807,394	171,435,214
6th District	192,070,838	104,553,775	352,153,279	1,865,105	650,642,997
Amadeo	8,046,905	4,371,170	10,808	1,048	12,429,931
General Trias	91,502,824	50,648,512	294,359,800	1,124,502	437,635,638
Tanza	60,000,223	23,623,655	724,901	458,987	84,807,766
Trece Martires City	32,520,886	25,910,438	57,057,770	280,568	115,769,662
7th District	99,013,764	106,367,565	17,796,661	1,545,968	224,723,958
Alfonso	11,508,816	7,356,929	138,970	130,247	19,134,962
Gen. Aguinaldo	3,447,629	1,635,478	111,129		5,194,236
Indang	15,223,652	8,958,478	2,125,978	38,420	26,346,528
Magallanes	3,051,327	1,105,824		60,917	4,218,068
Maragondon	7,622,688	2,814,939			10,437,627
Mendez	7,034,622	3,386,674		4,764	10,426,060
Naic	25,561,635	15,370,940	14,907,253	286,632	56,126,460
Tagaytay City	21,191,060	63,122,726	506,715	990,612	85,811,113
Ternate	4,372,335	2,615,577	6,616	34,376	7,028,904
TOTAL	1,159,326,081	767,952,601	1,586,544,493	12,103,180	3,525,926,35

Source: Manila Electric Company (Meralco), Ortigas Avenue, Pasig City

Table 7L Existing Power Substations, Province of Cavite: 2014

Substation	Location
Abubot Substation	Aguinaldo Hi-way, Abubot, City of Dasmariñas
Amadeo Substation	Provincial Road, Banaybanay, Amadeo
Bacoor Substation	Aguinaldo Highway, Habay, Bacoor
FCIE Substation	Langkaan, City of Dasmariñas

Substation	Location
Gateway Substation GMA Substation	Gateway Business Park, Javalera, Gen. Trias Lakeview Industrial Corp., Kabilang Baybay, Gen. Mariano Alvarez
Imus Substation	Agunaldo Highway, Anabu, City of Imus
Puerto Azul Substation	Puerto Azul, Ternate
Silang Substation	Aguinaldo Highway, San Vicente, Silang
Tagaytay Substation	Aguinaldo Highway, Buho, Silang
Tagaytay West Substation	Maharlika West, Tagaytay City
Tanza Substation	Amaya, Tanza
TMC II Substation	Tanauan (Quintana), Tanza
NGCP-Dasmariñas Substatio	Aguinaldo Highway, San Agustin, Dasmariñas
NGCP-Rosario Substation	Along Gen. Trias Drive, Rosario
NGCP-Ternate Substation	Along Governor's Drive, Ternate

Source: Manila Electric Company (Meralco), Ortigas Avenue, Pasig City

Table 7M Electric Capital Projects, Province of Cavite: 2014

Project Name	Objective	Status
Construction of Dasmariñas - Imus 115 kV Line (Dasmariñas Leg)	To provide switching flexibility to both Bacoor and Imus substations through the second 115 kV source from Dasmariñas substation and to increase the reliability of the existing 115 kV system by providing a link between Dasmariñas and Zapote 230 kV -115 kV substations.	To be carried over to 2015 due to problems encountered in securing right-of-way grant from the City Government of Dasmariñas
Partial conversion of Tanza 38ZW to 20kV/34.5kV	To unload the critically loaded Tanza 38ZW and improve the switching flexibility of a portion of Tanza 38 ZW during contingency by converting this section to 34.5kV	Completed on June 4, 2014
Reconductoring of portion of Tagaytay West 314TGW	To improve the switching flexibility of Tagaytay West314TGW as well as Silang circuits	To be carried over to 2015

Source: Manila Electric Company (Meralco), Ortigas Avenue, Pasig City

Water Supply

Access to safe drinking water is not only essential for the promotion and protection of public health but is a basic human right. Provision of safe water supply prevents the transmission of waterborne pathogens and reduces the exposure of individuals to chemical and physical hazards that could be ingested through contaminated drinking water (www.doh.gov.ph).

Generally, the entire province of Cavite has access to clean and safe water. It is being provided by Maynilad Water Services, Inc. also known as Maynilad, a water and waste water

services provider of cities and municipalities of the National Capital Region that forms the West Zone and some parts of Cavite which include City of Imus, City of Bacoor, Cavite City and the municipalities of Noveleta, Kawit and Rosario. (*Wikipedia*).

Moreover, the municipalities of Mendez, Indang, Silang, Gen. Mariano Alvarez, Maragondon, Tanza, Carmona, Amadeo, Gen. E. Aguinaldo, City of Dasmariñas, Tagaytay City and Trece Martires City are being supplied by water districts. Likewise, there are private corporations operating as water service providers in the province like General Trias Water Corporation in Gen. Trias, Naic Water System Corporation in Naic and Western Cavite Water Supply and Service Corporation in Ternate. The municipal

governments of Alfonso and Magallanes manage their respective water supply systems while others use deepwells as the traditional water source. In 2014, there are 343,935 customers served by these water service providers (Table 7N). The water rate schedule of each water service providers for residential connection is also shown in the table. For the water districts, the minimum charge (first 10 cubic meters) ranges from P163.00 in Gen. E. Aguinaldo Water District to P280.00 in Gen. Mariano Alvarez Water District. For LGUs and private corporations, the minimum charge ranges from P50.00 in Alfonso to P144.00 in Western Cavite Water Supply & Services, Ternate. Maynilad Water Services, Inc. charges P90.64 for the first 10 cubic meters.

Table 7N Number of Customers Served and Residential Water Rates by Water Service Providers, Province of Cavite: 2014

Water Agency	Number of Customers Served								Residential Water Rates		
	Residential	Commercial	Semi-Commercial	Industrial	Institutional	Government	Block Faucet/Others	Total	Minimum Charge (1st 10 cu.m.)	11-20	21-30
Maynilad Water Services, Inc.	90,172	1,885	2,079	55	51	53		94,295	90.64	217.91	442.59
Alfonso Waterworks Office	1,261	45				6	7	1,319	50.00*	10.00	10.00
Magallanes Waterworks Office	2,929	55				40		3,024	150.00	15.50	15.50
Naic Water Supply Corp.	4,754	207	1			17		4,979	120.00	10.00	10.00
Western Cavite Water Supply & Services Corp.	1,291	1				13		1,305	144.00	15.50	17.00
Amadeo Water District	5,961	67	22			38		6,088	211.00	26.00	28.00
Carmona Water District	11,470	136	147	6		61	64	11,884	238.60	26.20	29.00
Dasmariñas Water District	97,381	932	15,439			246	381	114,379	173.00	20.80	24.95
Gen. Aguinaldo Water District	2,395	94	147			7		2,643	163.00	17.30	19.70
General Mariano Alvarez Water District	13,538	165	460			40		14,203	280.00	29.65	32.35
Indang Water District	6,202	190	209			-		6,601	188.00	22.25	24.90
Maragondon Water District	3,075		181			24		3,280	168.00	18.00	19.50
Mendez Water District	4,018	149				1		4,168	195.00	21.50	24.00
Silang Water District	31,014	859	445			116		32,434	229.00	25.00	28.00
Tagaytay City Water District	12,345	906			66	102	1	13,420	233.00	25.80	28.55
Tanza Water District	10,227	343				39		10,609	180.00	18.30	19.45
Trece Martires City Water District	18,818	335				151		19,304	170.00	18.25	19.55
Total	316,851	6,369	19,130	61	117	954	453	343,935			

*1st 8 cu.m.

Source: Office of the Water District, Maynilad Water Services, Inc., & Waterworks' Office, Cavite

Irrigation

Based on research (*www.nia.gov.ph*), there are three categories of irrigation systems: national, communal, and private. National irrigation systems (NIS) are large and medium schemes. These are basically operated and maintained by National Irrigation Administration (NIA) where beneficiaries are charged irrigation service fee for the services rendered in the delivery of water. In the 1980s, joint management of portions of national systems with irrigators associations (IA) was effected.

Communal irrigation systems (CIS) are small-scale schemes and constructed with the participation of farmer-beneficiaries thru their IAs. The operation and maintenance (O&M) of CIS is turned over to IAs upon project completion subject to a cost recovery arrangement. Farmers

amortize the chargeable cost for a period not exceeding 50 years at 0 percent interest. The repayment scheme is pre-arranged and acceptable to both NIA and the IA. Another scheme is the payment of 30% equity equivalent to 30% of the total direct cost which is to be paid within one year.

Private irrigation systems are those constructed, operated and maintained by private individuals or groups with or without technical assistance by NIA or other government agencies.

NIA Cavite Report

Cavite Friar Lands Irrigation Systems (CFLIS) with its office located in Naic, Cavite is one of the oldest national irrigation systems in the Philippines. Sometimes in 17th century during the Spanish period, "encomiendas" or Spanish Royal land grants were implemented in Cavite. The priests were granted by the Spanish King, portions of agricultural lands which were subdivided into

four estates namely: Naic Estate, Sta. Cruz de Malabon Estate, San Francisco de Malabon Estate and Imus Estate, all of which are now popularly called as Cavite Friar Lands.

The national irrigation system covers the municipalities of Ternate, Maragondon, Naic, Tanza, Gen. Trias, Cities of Imus, Bacoor, and Dasmariñas and as presented on Table 70, 2,422.00 hectares are located at Naic Estate; 1,188.00 hectares came from Sta. Cruz de Malabon Estate while San Francisco de Malabon Estate comprised 1,941.00 hectares and Imus Estate was recorded at 803.00 hectares. This totaled to 6,354.00 hectares by which 5,123.00 hectares are operational or planted with crops and 1,231.00 hectares are non-operational. Furthermore, its source of water is shown in Table 7P.

Table 70 National Irrigation System's Firmed-up Service Area Province of Cavite: 2014

System	City/ Municipality	Firmed – Up Service Area (FUSA) (has.)			Farmer Beneficiaries
		Operational	Non- Operational	Total	
Naic Estate		2,151	271	2,422	1,851
Mabacao Pump	Maragondon		35	35	35
Kay-Akle River Irrigation System (RIS)	Ternate	18		18	14
Kay-Akle RIS	Maragondon	299	73	372	257
Balayungan RIS	Ternate	22		22	13
Balayungan RIS	Maragondon	207		207	128
Balayungan RIS	Naic	1,128	136	1,264	831
Culong-Culong RIS	Naic	347	27	374	397
Sahing RIS	Naic	130		130	176
Sta. Cruz de Malabon Estate		1,188		1,188	655
Tres Cruses RIS	Tanza	512		512	172
Matanda RIS	Tanza	676		676	483
San Francisco de Malabon Estate		1,043	898	1,941	1,316

System	City/ Municipality	Firmed – Up Service Area (FUSA) (has.)			Farmer Beneficiaries
		Operational	Non- Operational	Total	
Bankud - Vargas RIS	General Trias	210	323	533	
Plucena-Bayan RIS	General Trias	157	133	290	162
Butas-Lawang Bato RIS	General Trias	307	204	511	278
Butas RIS	General Trias	145	79	224	182
Butas-Marcelo RIS	General Trias	77	110	187	165
Butas-Palanas RIS	General Trias	147	49	196	189
Imus Estate		741	62	803	1,087
San Augustine RIS	City of Imus	174	62	236	278
Pasong Kastila RIS	City of Imus	227		227	288
Julian RIS	City of Imus	64		64	106
Makuling RIS	City of Dasmariñas	25		25	86
Lukshuhin RIS	City of Dasmariñas	52		52	77
Embarcadero RIS	City of Dasmariñas	63		63	47
Baluctot RIS	City of Dasmariñas	96		96	130
Molino RIS	City of Bacoor	40		40	75
Total		5,123	1,231	6,354	4,909

Source: National Irrigation Administration (NIA), Naic, Cavite

Table 7P National Irrigation System's Source of Water, Province of Cavite: 2014

National Irrigation System	Source of Water	Location	
Kay-Akle RIS	Kay-Akle River	Mabato, Maragondon	
	Aliang River	Pacheco, Magallanes	
	Narvaez River	Narvaez, General Aguinaldo	
	Sinaliw River	Sinaliw, Alfonso	
	Borahan River	Marahan, Alfonso	
	Kaytitingga River	Kaytitingga, Alfonso	
	Kay-Akle RIS Extension	Caputatan Creek	San Miguel, A, Maragondon
		Balayungan RIS	Balayungan River
	Balayungan RIS	Lambak River	Pulo, Indang
		Habuling River	Mahabang Kahoy, Indang
Quibabaya River		Panungyan, Mendez	
Catmon River		Pajo, Alfonso	
Zambal Creek		Zambal, Tagaytay City	
Aloague River		Luksuhin, Alfonso	
Quiling River		Daine, Indang & Taywanak, Alfonso	
Ikloy River		Kaytambog/Kayquit 2, Indang	
Banaba River		Banaba Cerca, Indang	
Culong-Culong RIS		Balsahan River	Calumpang Lejos, Indang
	Caisobo River	Calumpang Lejos, Indang	
Ikloy River	Ikloy River	Kaytambog/Kayquit 2, Indang	
	Banaba River	Banaba Cerca, Indang	
	Sahing RIS	Sahing River	
Tres Cruces RIS	Balagbag River	Sabang, Naic	
	Timalan River	Tres Cruces, Tanza	
	Marilyn River	Tres Cruces, Tanza	
	Bancud River	Bancod, Indang	
Matanda RIS	Polonan River	Paradahan, Tanza & Conchu, Trece Martires City	
	Quintana River	Quintana, Trece Martires City	
	Indang River	Limbon, Indang	
Bankud - Vargas RIS	Bancud River	Bancod, Indang	
	Saluysoy River	Kaytapos, Indang	
	Kay-alamang River	Buenavista, Gen. Trias	

National Irrigation System	Source of Water	Location
Plucena-Bayan RIS	Panaysayan River	Pinagtipunan, Gen., Trias
Butas-Lawang Bato RIS	Rio Grande River	San Francisco, Gen. Trias
Butas-Marcelo RIS	Alang-ilang River	San Francisco, Gen. Trias
Butas-Palanas RIS	Rio Grande River	Navarro, Gen. Trias
San Agustine RIS	Alang-Ilang River	Langkaan, City of Dasmariñas
Pasong Kastila RIS	Alang-Ilang River	Malagasang, City of Imus
Julian RIS	Malagasang Creek	Bucandala, City of Imus
Makuling RIS	Sociedad River	Salitran, City of Dasmariñas
	Pasong Baka Creek	Salitran, City of Dasmariñas
Luksuhin RIS	Malinta River	Palapala, City of Dasmariñas
Embarcadero RIS	Malaki ng Ilog River	Paliparan, City of Dasmariñas
Baluctot RIS	Baluctot River	Salitran, City of Dasmariñas
Molino RIS	Don Celia River	Molino, City of Bacoor

Source: National Irrigation Administration (NIA) Naic, Cavite

Communal Irrigation System (CIS) has a total firm-up service area of 933.00 hectares serving the municipalities of Gen. E. Aguinaldo, Ternate, Maragondon, Carmona, Silang, Gen. Mariano Alvarez, Kawit, Naic, Magallanes and the City of Bacoor. Out of the total, 429 hectares are operational while 504 hectares are non-operational. Farmer beneficiaries were registered at 369 (Table 7Q).

Table 7Q Communal Irrigation System's Firmed-up Service Area, Province of Cavite: 2014

System	Firmed – Up Service Area (FUSA) (has.)			FBs
	O	NO	Total	
Gen. E. Aguinaldo Small Irrigation Project (SIP), Gen. Aguinaldo		30	30	
Narvaez SIP, Gen. Aguinaldo	100		100	
Golova Communal Irrigation System (CIS), Ternate	60		60	28
Magay CIS, Maragondon	36	264	300	73
Lantic I CIS, Carmona	99		99	27
Lantic II CIS, Carmona	55		55	16
Maduya Pump CIS, Carmona	34		34	7
Lumil & Tartaria (Batas) PCIS, Silang		40	40	
F. de Castro PCIS, General Mariano Alvarez		32	32	85
Pasong Saguing PCIS, General Mariano Alvarez		34	34	99
Kawit PIS, Kawit		60	60	20
Palangue PCIS, Naic		35	35	
Pacheco I & II PCIS, Magallanes	42		42	10
San Nicolas II PIS, City of Bacoor	3	9	12	4
Total	429	504	933	369

Source: National Irrigation Administration (NIA)

Naic, Cavite

O-Operational; NO-Non-operational; FBs-Farmer Beneficiaries

To sum up, the reported firmed-up service area (FUSA) or the service area to be covered by irrigation facilities totaled to 7,287 hectares by which 6,354 hectares comprised national irrigation system while 933 hectares are communal irrigation system. Out of the total, 5,552 hectares are operational while non-operational totaled to 1,735 hectares. Farmer beneficiaries were recorded at 5,278 (Table 7R).

Records also indicate that the major irrigation facilities in the system consist of diversion dams, minor dams, reservoirs and conveyance canals including appurtenant structures (Table 7S).

Table 7R Firmed-up Service Area by Irrigation System, Province of Cavite: 2014

Irrigation System	Firmed-up Service Area (FUSA) (Has)			FBs
	Operational	Non-Operational	Total	
National Irrigation System	5,123	1,231	6,354	4,909
Communal Irrigation System	429	504	933	369
Total	5,552	1,735	7,287	5,278

Source: National Irrigation Administration (NIA)

Naic, Cavite

Table 7S Number of Irrigation Facilities, Province of Cavite: 2014

Irrigation Facility	Number
Diversion Dams	18
Minor Dams	69
Naic	11
Tanza	12
Gen. Trias	20
City of Imus	26
Reservoirs	2
Conveyance Canal	93.81 km.
NIA Road	245.39 km.

Source: National Irrigation Administration (NIA)

Naic, Cavite