



WATER MANAGEMENT IN DISTRICT COOLING PLANTS POLICY



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Changes History Sheet

DOC. CHANGE REQUEST NO. & DATE	PAGE NO.	SUMMARY OF CHANGE	NEW EFFECTIVE DATED



1. Introduction

- The Department of Energy (DoE) is committed to ensure reliable, safe and affordable energy services in the Emirate of Abu Dhabi by developing policies, regulations and strategies to ensure an effective energy transition that underpins Abu Dhabi's sustainable growth, all while protecting the consumers and minimising negative impact on the environment.
- To support the implementation of Abu Dhabi's Demand-Side Management and Energy Rationalization 2030 Strategy, a number of initiatives were developed that promote energy efficiency, consumer protection and protect environment. District Cooling ("DC") is one of the key programmes which provides a major contribution in energy efficiency that has an estimated potential of nine percent (9%) of the overall energy saving against BAU baseline value. In 2019, the DoE issued the DC Regulatory Framework comprising of the DC Applicability Regulations and the DC Regulations together with the DC Technical Code that were released following a close engagement and consultation with private and governmental entities. The DoE is now working in accordance with a road map for the DC Regulations implementation in a close collaboration with the relevant authorities.
- While DC is bringing efficiencies in terms of energy savings along with other benefits, however, it is also generally characterized by its high water consumption which is primarily the net consumption of water that is supplied to the Cooling Towers to offset the water losses due to: evaporation, droplets drift and blowdown to maintain the level of Total Dissolved Solids (TDS) in the system at an acceptable level.
- Availability of water sources at all times is a key driver in the decision making process in the application of DC. Lack of sustainable and secured access to appropriate water resources would mean that DC would not be assessed as a feasible alternative to conventional cooling, hence losing the opportunity of efficiency gains. While a balance should be struck between the overall benefits of opting for DC in compliance with the DC Regulations, the availability of water at an acceptable quality and quantity is a very crucial parameter in the feasibility criteria included in the DC Applicability Regulations.



- It remains that there is a lack of clarity on the advantages that DC brings to the overall efficiencies due to the water requirements, hence an enabling direction in the form of a policy relating to water is essential. To ensure water availability will not constrain the penetration of DC under favourable conditions, the DoE has designed this policy ("Policy") which aims to assert the key issues and provide a way forward by issuing a statement to support the continued implementation of DC Regulations, and promote utilization of other available water sources to help conservation of potable water.

1.1 Purpose

This Policy aims to address potential sources of water supply that could offer options for DC Providers through improvement of overall water management, and supports the DC Regulations in applying DC principles where it is found feasible. This Policy allows Recycled Water (RW), Potable Water (PW) and Seawater (SW) for DC use in the Emirate of Abu Dhabi from an environmental, Demand Side Management (DSM) as well as techno - economic and quality perspectives.

1.2 Scope

This Policy is applicable to all activities pertaining to a water source that is supplied to the Cooling Towers to offset the water losses due to: evaporation, droplets drift and blowdown to maintain the level of Total Dissolved Solids (TDS) in the DC system at an acceptable level.

Key activities envisaged under this Policy are listed below:

- Develop Water Management in District Cooling Plant Policy to address and guide the water use for DC Plants and assess the suitability of this use; and
- Consider options and compare RW, PW and SW for DC use in the Emirate of Abu Dhabi from an environmental as well as techno-economic and quality perspective.

1.3 Responsibility for Implementation

The following stakeholders are responsible for supporting the implementation of this Policy:



- Department of Energy (DoE)
- Entities (Governmental & Private) listed under Annex – A
- The relevant entity in the future DC schemes

1.4 References

This Policy is established by the Abu Dhabi Department of Energy (DoE), pursuant to:

- Law No. (2) of 1998 on the Regulation of the Water and Electricity Sector in the Emirate of Abu Dhabi (as amended).
- Law No. (11) of 2018 on the Establishment of the Department of Energy.
- Executive Regulations No. 20 on Marine Water Quality Discharge to the Environment issued in 2020 by Environment Agency of Abu Dhabi
- Water Quality Regulations, 5th Edition issued by DoE in 2021
- Recycled Water and Biosolid Regulations, 3rd Edition issued by DoE in 2021
- Trade Effluent Control Regulations, 2nd Edition issued by DoE in 2022
- District Cooling Technical Code issued by DoE in March 2020
- District Cooling Metering Code issued by DoE in March 2020
- The Recycled Water Distribution Code issued by DoE in December 2021
- DoE Chairman Decision No (44) of 2019 concerning the District Cooling Regulation
- DoE Chairman Decision No (45) of 2019 concerning the District Cooling Applicability Regulation
- ADWEA's Memorandum issued in July of 2007 regarding PW use in DC Systems Ref. No. ADWEA/PROJ/ 2548

1.5 Distribution

The approved version of this Policy will be distributed to the stakeholders identified in Annex A and a copy of the Policy will be available under “Publications” section in DoE’s website and DoE's Document Management System (DMS).



2. Definitions

Blowdown – means the effluent water which is released from a water-cooled Cooling Tower system to maintain the concentration of Total Dissolved Solids at an acceptable level.

Building – means any building and associated structures and facilities constructed or to be constructed by, or on behalf of Customers.

Chilled Water – means cooled water used in a closed hydronic system (typically chemically treated) for air conditioning or process cooling applications.

Cooling Energy – means the removal of heat energy, expressed in megawatt hours cooling or kilowatt hours cooling.

Cooling Load – means the rate of removal of heat energy, expressed in megawatts cooling or kilowatts cooling.

Cooling Tower – means a heat removal device using water to reject heat to the atmosphere and cool the condenser side of a chiller, using evaporation (latent heat of vaporisation) to reject heat from condenser water.

Cooling Tower Make-Up – means a water source used to replace water loss in Cooling Towers due to evaporation, drift and blowdown.

Customer – means a person or entity that includes, but is not limited to, an owner of a Building or an apartment, home unit or other form of segregated accommodation within a Building, or an owners' association in relation to a Building, or an industrial facility, who contracts for DC Services.

DC Network - means the distribution piping system (including all piping, pumps, valves and fittings) and related equipment to be operated and maintained by the DC Wholesale Provider ("**Offtaker**") for purposes of transporting Chilled Water from one or more DC Plant(s) or Temporary Plant(s) to Building(s) or to distribution pipelines that comprise a portion of DC Retailer Facilities.

DC Plant – means the central cooling plant, including chillers, pumps, piping, TES facilities, Cooling Towers, associated electrical substations, emergency power supply equipment, control systems, switchgear, electrical auxiliary equipment and other installations and ancillary equipment, used or useful in the production of Cooling Energy and the distribution of Chilled Water, operated and maintained for purposes of supporting the provision of DC Provider Services.



DC Provider – means an entity which generates Cooling Energy and distributes such Cooling Energy to DC Retailers or to Customers using DC Provider Facilities pursuant to a DC Provider licence.

DC Regulations – means any executive regulations or regulations and codes issued by the DoE pursuant to the Law and related to the District Cooling sector in the Emirate of Abu Dhabi, as may be amended, supplemented or replaced from time to time.

DC Retailers – means all activities in connection to procuring Licensed DC Services from one of the Offtakers and re-sell it to end-users.

DC System/Schemes – means the equipment comprising a system of centralised production and distribution of Cooling Energy in the form of Chilled Water from a DC Plant to multiple Buildings through DC Networks.

District Cooling or DC – means the centralised production and distribution of Cooling Energy in the form of Chilled Water from a DC Plant to multiple Buildings through a DC Network.

Facility or Facilities means any land, building or premise.

Government – means the Government of the Emirate of Abu Dhabi.

Greenhouse Gases - Gases that trap heat in the atmosphere, including carbon dioxide (CO₂) which is the primary greenhouse gas emitted through human activities and other gases such as: Methane (CH₄), Nitrous Oxide (N₂O).

Law - means Law No (2) and Law No (11);

Law No (2) - means Law No (2) of 1998 concerning the Regulation of the Water and Electricity Sector in the Emirate of Abu Dhabi (as amended from time to time);

Law No (11) - means Law No (11) of 2018 concerning the establishment of the DoE (as amended from time to time);

Potable Water – means water defined in the Water Quality Regulations (Fifth Edition), issued by DoE, January 2021.

Recycled Water – means treated liquid effluent produced by a wastewater treatment system that is suitable for reuse according to Recycled Water and Biosolid Regulations (Fourth Edition) issued by DoE, January 2021.



Temporary Plant means a DC Plant providing Chilled Water on a temporary basis until the permanent DC Plant is ready. A Temporary Plant is, subject to the DoE's approval, intended to operate for a maximum of five (5) years.

Ton Refrigerants –means a unit used to measure Cooling Load and is the generally accepted form of measuring capacity of refrigeration in the industry.

Total Dissolved Solids – means the combined content of all inorganic and organic substances dissolved in a given volume of water, measured according to the Water Quality Regulations (and expressed in unit of mg per liter of water, a unit which is equivalent to parts per million (ppm)).

Zero Liquid Discharge – means a process for treating industrial liquid effluents in which the effluent is evaporated until the dissolved solids precipitate as crystals, with subsequent removal and dewatering of the crystals and return of the condensed water vapour to the industrial process.

List of Abbreviations

AADC - Al Ain Distribution Company
ADDC - Abu Dhabi Distribution Company
ADSSC - Abu Dhabi Sewage Services Company
BAU - Business As Usual
DC - District Cooling
DSM - Demand Side Management
DoE - Department of Energy
EAD - Environment Agency – Abu Dhabi
GHGs - Greenhouse Gases
PW - Potable Water
RW - Recycled Water
RT - Refrigerant Ton
SW – Seawater
TDS - Total Dissolved Solids
ZLD - Zero Liquid Discharge



3. POLICY STATEMENT

- The Department of Energy (DoE) is responsible for the setting the strategy, policy and regulations of Abu Dhabi's energy sector. DoE is tasked with developing a strategic initiative that diversifies and secures energy sources for economic, environmental, and social sustainability. It is our mission to develop and implement strategic plans for a future-proof sustainable energy sector in Abu Dhabi and to govern the Emirate's energy sector in accordance with international best practices and standards.
 - DC Schemes can provide significant benefits to the Emirate when applied in areas where the system is technically and economically feasible, as well as to ensure that DC services provided in the premises located in licensed areas (new real estate developments) are complying with the criteria, technical KPIs and market competition requirements set out clearly in the DC Regulations. These benefits include significant reductions in:
 - Peak electricity demand, thereby reducing additional investment in
- دائرة الطاقة هي المسؤولة عن وضع الإستراتيجيات والسياسات واللوائح الخاصة بقطاع الطاقة في إمارة أبوظبي. حيث تم تكليف دائرة الطاقة بتطوير مبادرات إستراتيجية تعمل على تنويع مصادر الطاقة وتأمينها تواكب المستقبل ووفقاً لأفضل الممارسات والمعايير الدولية ، لتحقيق الاستدامة الاقتصادية والبيئية والاجتماعية.
 - يمكن أن توفر تقنية تبريد المناطق فوائد كبيرة للإمارة عندما يتم تطبيقها في المناطق التي يكون فيها النظام مجدياً تقنياً واقتصادياً وكذلك لضمان امتثال خدمات تبريد المناطق المقدمة في المباني الواقعة في المناطق المرخصة (مشاريع التطوير العقاري الجديدة) للمعايير، ومؤشرات الأداء الرئيسية الفنية ومتطلبات المنافسة في السوق المنصوص عليها بوضوح في اللوائح التنظيمية الموضوعة من قبل الدائرة. حيث تشمل هذه الفوائد خفض في معدلات:
 - ذروة الطلب على الكهرباء ، وبالتالي تقليل الاستثمار الإضافي في البنية التحتية لتوليد الكهرباء ونقلها وتوزيعها



electricity generation, transmission, and distribution infrastructure; ○ Consumption of electricity, thereby reducing fuel expenditures for power plant as well as operation and maintenance costs; and ○ Negative environmental impacts resulting from power generation, including emissions of Greenhouse Gases (GHGs) • DC Systems require a supply of water to cool the DC chiller plant condensers. Alternative water sources include PW, RW, and SW. Whatever water source is used, DC Plant operations will result in a wastewater discharge to the foul sewer, storm sewer or the sea. • Given the need for continuous supply of water in stable and controlled quality conditions such as that can be offered by desalinated water, but at cost, the use of RW or SW should be considered if it is both available and found to be technically and commercially feasible. The DoE issues this Policy to achieve the following objectives: 1. DC Systems should use the most feasible and cost-effective water sources available, with acceptable	○ استهلاك الكهرباء ، وبالتالي تقليل نفقات الوقود لمحطة توليد الكهرباء وكذلك تكاليف التشغيل والصيانة ○ الآثار البيئية السلبية الناتجة عن توليد الطاقة ، بما في ذلك انبعاثات ثاني أكسيد الكربون والغازات الدفينة الأخرى • تتطلب أنظمة تبريد المناطق إمدادًا بالمياه لتبريد المكثفات التابعة للمبردات و لتعويض المياه المفقودة من خلال التبخر والصرف في محطات تبريد المناطق . وقد تكون مصادر هذه المياه: محلاة أو مياه معاد تدويرها أو مياه البحر. أيًا كان مصدر المياه المستخدم ، فإن عمليات محطات تبريد المناطق تنتج عنها تصريف مياه الصرف الصحي إلى المجاري أو الصرف الصحي أو البحر. • نظرًا إلى الحاجة إلى الإمداد المستمر بالمياه ذات جودة مستقرة وخاضعة للرقابة مثل تلك التي يمكن أن توفرها المياه المحلاة ولكن بسعر مكلف ؛ ولكن عندما تكون المصادر الأخرى من المياه مثل المعاد تدويرها أو مياه البحر متاحة ووجدت مجدية تقنيًا واقتصاديًا ، فيجب أخذها في الاعتبار. تصدر دائرة الطاقة هذه السياسة لتحقيق الأهداف التالية: 1. يجب أن تستخدم أنظمة تبريد المناطق مصادر مياه متاحة بجودة وكمية مقبولة وأكثر جدوى وفعالية من حيث التكلفة مع مراعاة
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quality, considering all capital and operating costs and the constraints imposed by wastewater discharge standards and the environmental regulations; and	جميع تكاليف رأس المال والتشغيل والقيود التي تفرضها معايير وتعليمات تصريف المياه العادمة والصناعية واللوائح البيئية ذات الصلة.
2. If the most feasible and cost-effective water source is PW, such water should be made available for DC Systems. Such demand should be planned for in consideration of the energy sector planning process, and in accordance with relevant water codes for accommodating such connections to meet the water demand designed for District Cooling application.	2. إذا كان مصدر المياه الأكثر جدوى وفعالية من حيث التكلفة هو المياه المحلاة ، فيجب توفير هذه المياه لأنظمة تبريد المناطق. يجب التخطيط لهذا الطلب مع مراعاة عمليات التخطيط الخاصة بقطاع الطاقة ووفقاً للقواعد والكودات الفنية للمياه ذات الصلة لإجراء مثل هذه الوصلات بحجم يلبي الطلب على المياه المصمم لتطبيق تبريد المناطق.
3. Such demand of the water for DC may be sourced from RW or even SW or a blend of water sources as conditions prevails, subject to meeting the quality desired for the DC Plant operations.	3. قد يتم الحصول على طلب المياه لمحطات التبريد من المياه المعاد تدويرها أو حتى مياه البحر أو مزيج من مصادر المياه المتنوعة حسب الظروف السائدة ، مع مراعاة تلبية الجودة المطلوبة للمبردات.
4. The DC Regulations, including all other codes relevant to water use, water re-use and water discharges are to be complied with in respect to the established KPIs in the DC Regulations and complying with water and environmental quality testing and monitoring arrangements.	4. يجب الامتثال للوائح والقواعد الفنية الخاصة بتبريد المناطق ذات الصلة : باستخدام المياه وإعادة استخدام المياه وتصريف المياه مع مراعاة مؤشرات الأداء الرئيسية المحددة في القواعد الفنية الخاصة بتبريد المناطق والامتثال لبرنامج الفحوصات الخاصة بجودة المياه والبيئة.



5. To maintain security of supply and business continuity in providing District Cooling, water storage at the DC Plant is essential and must follow the Water Supply Regulations in terms of the storage requirements. DC Providers should have mitigation plans (Business Continuity Plan) in preparation for any extended periods of water interruptions.	5. الحفاظ على أمن الإمدادات واستمرارية الأعمال في تقديم الخدمات التبريد ، يعد تخزين المياه في محطات تبريد المناطق أمراً ضرورياً ويجب أن يراعي ويمتثل لتعليمات إمدادات المياه من حيث متطلبات التخزين ويجب أن يكون لدى مزودي خدمة التبريد خطة بديلة (خطة استمرارية الأعمال) في حالة فترات انقطاع المياه الطويلة.
6. There should be consideration of Blowdown reuse, where appropriate, to support in water demand management within DC Plant facilities and buildings, either in irrigation or cleaning use for non-drinking applications. In addition, Blowdown reuse could assist in reaching Zero Liquid Discharge.	6. يجب إعادة استخدام مياه الصرف عند الاقتضاء لدعم إدارة الطلب على المياه داخل منشآت ومباني التابعة لمحطات تبريد المناطق للاستخدامات الغير الصالحة للشرب مثل: الري أو التنظيف ، وذلك بهدف الوصول إلى تصريف السائل صفر (ZLD).



4. Annexes

4.1 Annex A: List of Entities

- Department of Municipalities and Transport (DMT)
- Abu Dhabi Distribution Company (ADDC)
- Al Ain Distribution Company (AADDC)
- Abu Dhabi National Oil Company (ADNOC)
- Environment Agency – Abu Dhabi (EAD)
- Department of Economic Development (DED)
- Abu Dhabi Airport Company (ADAC)
- TAQA
- Tabreed
- Bunya
- PAL Holding Company
- PROVIS
- TASLEEM
- Manazel
- ALDAR

4.2 Annex B : Policy Overview

- The Department of Energy (DoE) is committed to ensuring reliable, safe and affordable energy services in the Emirate of Abu Dhabi by developing policies, regulations and strategies to ensure an effective energy transition that underpins Abu Dhabi's sustainable growth, all while protecting the consumers and minimising negative impact on the environment.
- To support the implementation of Abu Dhabi's Demand-Side Management and Energy Rationalization 2030 Strategy, a number of initiatives were developed that promote energy efficiency, consumer and environmental protection. District Cooling is one of the key programmes which provides a major contribution to increasing energy efficiency, with an estimated potential of nine percent (9%) of overall energy savings against BAU



baseline value. In 2019, the DoE issued the DC Regulatory Framework comprising of the DC Applicability Regulations and the DC Regulations together with the DC Technical Code, which were released following a close engagement and consultation with private and Governmental entities. The DoE is now working in accordance with a road map for the DC Regulations implementation in a close collaboration with the relevant authorities.

- The DC Technical Code was developed to support the overall governance of, and compliance with, technical conditions and requirements to allow the operations and maintenance of the DC Schemes in a safe, coordinated, and efficient manner.
- DC Schemes can provide significant benefits to the Emirate of Abu Dhabi when applied in areas where a DC System is technically and economically feasible, and when fully compliant with the criteria set out in the DC Regulations and meeting of market competition requirements. These benefits may include, but are not limited to:
 - Reduction in peak electricity demand, thereby reducing additional investment in electricity generation, transmission, and distribution infrastructure;
 - Reduction in consumption of electricity, thereby reducing fossil fuels used in power plants and as a result, reduced environmental impacts resulting from power generation, including emissions of Greenhouse Gases (GHGs);
 - Optimisation of the use of different water sources e.g., RW and in some cases SW for Cooling Tower Make Up water purposes; and
 - Other supplementary benefits, such as better customer experiences and improved service delivery.
- There are approximalty ~ 600K RT (Refrigerant Tons) of District Cooling in Abu Dhabi, and water estimated average consumption is ~ 150,000 M3/Day which is equivalent to about five percent (5%) of the total desalinated water daily demand. This represents a key consumption category in the water balance calculation which needs to be taken account of in the demand



forecasting, as this critical service is of paramount importance for the Emirate of Abu Dhabi and its future sustainability goals.

- Whilst District Cooling is bringing efficiencies in terms of energy savings along with other benefits, however it is also generally characterized by its high water consumption which is primarily the net consumption of water that is supplied to the Cooling Towers to offset the water losses due to: evaporation, droplets drift and Blowdown to maintain the level of Total Dissolved Solids in the DC System at an acceptable level. Water cooling is still perceived to offer better cooling efficiencies when compared with air cooling under the conditions prescribed in the DC Regulations and the DC Technical Code.
- Availability of water sources at all times is a key driver in the decision making process for the application of District Cooling. Lack of sustainable and secured access to appropriate water resources would mean that District Cooling may not be assessed as a feasible alternative to conventional cooling, and therefore losing the opportunity of any efficiency gains. While we need to strike a balance between the overall benefits of opting for District Cooling according to DC Regulations, the availability of water at an acceptable quality is a very crucial parameter in the feasibility criteria included in the DC Applicability Regulations.
- It is worth noting that the DC Regulations provide conditions in connection with water demand management, and a KPI in connection with water consumption is included in the DC Technical Code as one of the technical KPIs to target achieving pre-set consumption rate based on the best available technical data.
- Major potential sources of Cooling Make-up Water are desalinated water, RW and SW, which may be considered in certain applications. Total Dissolved Solids, among other water quality parameters, in Cooling Make-Up Water play a major factor in water source selection which needs to be addressed. While water supply is fundamental to any DC Plant operations, compliance with water reuse and water discharge regulations can also play a major role in the selection of the water source, together with the



anticipated quality to be met in compliance with the regulatory limits for discharge either to the storm water system or to the sewerage network, in order to meet the environmental discharge standards set by the Environmental Agency – Abu Dhabi.

- Any DC Plant will generate wastewater that requires disposal. Such wastewater may include, depending on the condenser cooling method used: Cooling Tower Blowdown, polishing plant wastewater, or water which has been circulated directly in chiller condensers.
- There are trade-offs between Cooling Tower Make-up Water consumption, Cooling Tower Make-up Water quality, Blowdown water quantity and Blowdown water quality. With higher cycles of concentration, water consumption is reduced but wastewater solids concentration is increased.
- Typically, chiller condenser heat is removed by circulating water through Cooling Towers, where heat is rejected through evaporation. Cooling tower Make-Up Water must be continuously added to replace water lost through evaporation, Cooling Tower Drift (small amounts of water vapour driven away by wind), and Blowdown. The amount of the Blowdown is driven by the Cycles of Concentration, which is the ratio of concentration of TDS in the Blowdown water compared to the TDS in the Cooling Tower Make-Up Water.
- The use of desalinated water or RW or SW is not explicitly mandated in the DC Regulations, although the Abu Dhabi Water and Electricity Authority known as ADWEA (in 2007) had issued a policy restricting the use of desalinated water for DC Plants, notwithstanding that alternative water sources were not readily available at that time, and DC Providers were forced to change their plans. In addition, there was an inability to secure RW due to the following:



- Limited visibility on the application process;
- Limited understanding of the future network expansions; and
- Variation of RW quality in some areas, which greatly impacted operating costs.

4.3 Annex C: Roles of Relevant Agencies & Regulations

- The DoE is responsible for regulating the Water Sector, including desalinated water, wastewater and recycled water. The relevant regulations such as Recycled Water and Biosolids Regulations, Trade Effluent Discharge Control Regulations and the Drinking Water Quality Regulations were issued to support the adequate use and discharge control of the applicable water.
- Licensed distribution companies are responsible for owning, operating and maintaining the distribution and supply of desalinated and recycled water. Meanwhile, Abu Dhabi Sewerage Services Company is responsible for the collection, treatment, and disposal of wastewater.
- Any discharges to the stormwater network, marine environment and land is regulated by the Environment Agency-Abu Dhabi (EAD). The Municipalities manage the storm water network, with the objective of meeting EAD's requirements for monitoring of the discharges to the land or to environment, including marine discharges.
- EAD's mandate is extended to the ground water protection and EAD regulates the abstractions and the permitting process of ground water wells.
- All projects which are executed by contractors or developers need to comply with discharge limits to the marine environment and storm water networks, which must be submitted through EAD's permitting process to determine what will be the environmental permitting requirements. Projects are evaluated on a case-by-case basis. Municipalities coordinate as required with EAD for issuing the environmental permit.



Relevant Regulations:

- Executive Regulations No. 20 on Marine Water Quality Discharge to the Environment was issued in 2020 by EAD providing the discharge limits for discharges to the marine environment, together with the Water Quality Parameters and Discharge limits set out in the relevant Annex attached to these Regulations, along with the conditions set for compliance purposes. EAD is currently developing specific discharge limits for different types and sources of discharges under their respective regulation. There are no current environmental regulations specific to District Cooling.
- DoE has established the Trade Effluents Control Regulations that govern the discharge of any trade effluent to the sewerage system generated from different industrial and commercial activities, together with identifying a number of regulatory limits including TDS levels. The DoE has also established the Recycled Water and Biosolids Regulations for the reuse and proper management of Recycled Water and Biosolids in the Emirate of Abu Dhabi, with specific quality regulatory limits including TDS limits and other characteristics.
- The DoE has issued in accordance with the provisions of Law No (11) of 2018 following the Executive Council's approval, the following regulations:
 - Department of Energy Chairman Decision No (44) of 2019 concerning the District Cooling Regulation
 - Department of Energy Chairman Decision No (45) of 2019 concerning the District Cooling Applicability Regulation
- In addition, DoE issued the following Codes:



- District Cooling Technical Code dated March 2020
- District Cooling Metering Code dated March 2020
- The Recycled Water Distribution Code dated December 2021

Note: All the Codes and Regulations are available on the DoE website:
www.doe.gov.ae/en/Publications