NATIONAL ENERGY STRATEGY

2012–2030
Introduction

Chile’s Energy Challenge
The Foundation of a Developed Country
Chile’s Energy Challenge
The Foundation of a Developed Country

Chile is at a crucial historical moment. It is faced by the enormous challenge and the noble task of generating the right conditions to achieve development over the coming decades. This objective set forth by this Government represents the serious aspiration of our country to provide greater and better opportunities to our fellow Chileans.

Transforming Chile into a developed country not only implies achieving certain macroeconomic goals, but also making a significant step forward, both quantitatively and qualitatively in education, strengthening healthcare guarantees, making decisive progress in the access to and quality of housing, and putting an end, once and for all, to extreme poverty in order to improve conditions for thousands of Chileans who currently live in poverty.

Achieving that state of development requires sustained growth by the Chilean economy. Chile grew at a rate of 5.4% between 1986 and 2010 (7.4% between 1986 and 1998 and 3.3% between 1999 and 2009). Since 2009 – particularly in 2010 and 2011 –, our country has recovered its capacity to maintain high growth rates, with the productive sector reacting vigorously and a very active economy, which in turn has resulted in positive employment figures. In fact, the projected growth of the Chilean economy in 2011 was 6.3%, with most sectors showing strong expansion.

As our country grows, it demands more energy, revealing a natural linkage between economy and energy. Therefore, the challenge for Chile today is to have sufficient and competitive energy resources to support this development. Energy is an essential input for society. Its availability and supply directly affect social and economic growth and, consequently, the reduction of poverty. The lack of access to reliable energy sources and networks presents a dangerous limitation to sustainable social progress, to economic growth and to the wellbeing of the population. Under these circumstances, Chile must have clarity when forecasting growth to ensure that it can be sustained with clean, secure and competitive energy.
How much Energy do We Need and at what Cost?
Demand in a Developed Society

The country currently has a total generating capacity of 16,970 MW, of which 73.6% is obtained from the Central Interconnected System (Sistema Interconectado Central, SIC), 25.6% from the Norte Grande Interconnected System (Sistema Interconectado del Norte Grande, SING) and 0.8% from the medium-sized systems in Aysén and Magallanes.

The maximum demand last year was 6,881 MW from the SIC and 2,162 MW from the SING.

On analyzing gross generation during 2011, the SIC produced 46,095 GWh, which represents an increase of 6.8% compared to 2010. Likewise, the SING generated a gross total of 15,878 GWh, which is 5.2% higher than the previous year.

Growth rates of approximately 6% to 7% are projected for electricity consumption in Chile between now and 2020, which means that total electricity demand will reach almost 100,000 GWh by that year. This will require increasing the supply by more than 8,000 MW through new generation projects during that period.

This is a huge undertaking, particularly considering that Chile is predominantly an importer of energy resources and that in recent years it has especially depended on fossil fuels at high prices, which has resulted in an increase in the marginal costs of energy generation and, consequently, higher electricity prices.

SIC and SING Demand 2000 – 2030

Source: CNE and the Energy Ministry
The latter has additionally been impacted by the abrupt change in the conditions of gas supply from Argentina, as well as the increase in investment costs for conventional technologies, both in the spot market and for energy prices in contracts for free and regulated clients. In fact, electricity prices in Chile are among the highest in Latin America and higher than the OECD average. Therefore, Chile is very vulnerable in terms of energy and one of our challenges will be to have sufficient and competitive energy resources to sustain the country’s growth.
Undoubtedly, our country needs more energy, but not just any kind. Our Government has from the beginning made a fundamental commitment that Chile will develop energies that enable the country to have sustainable economic development while providing adequate safeguards in terms of health and environmental protection. One clear example, among other measures, are the emission standards for thermoelectric plants set by our Government in 2011, which have raised the country to levels of requirements that are similar to those applied in the European Union.

Thus, our first commitment is to develop clean, renewable energies, which are also abundant in our country. In fact, water is a major component of our electricity matrix, and in 2011 represented almost 35% of the energy produced. We are, therefore, decidedly promoting its development because of the great potential offered by this resource.

Non-conventional renewable energy (NCRE) sources are another option. The development of these types of projects depends on the characteristics inherent in each of the available technologies and the different obstacles they face. As a result, our challenge will be to sustainably boost their development, taking into account the degree of maturity of the projects, which will increase in the following years.

Despite this commitment, we realize that we cannot do without fossil fuels as a source of energy generation. They are important to ensure supply, because of their high plant factor and their average costs which are competitive in comparison to those of other technologies. However, we must extend the regulations regarding the use of these types of fuel and demand the highest standards of environmental compliance.

In the end, the aim is to grow and achieve development within the framework of an absolute commitment to protecting the environment, but bearing in mind that no energy alternative, with the exception of energy efficiency measures, has zero environmental impact. Consequently, we need to obtain energy from clean, safe and economically efficient sources, incurring in the lowest possible costs in order to support the growth of different productive sectors.
The Chilean electricity sector was a global pioneer in establishing competitive conditions in the generation and sale of electricity, maintaining the transmission and distribution segments under a system of financial regulation. In addition, private investment in generation, transmission and distribution assets led to significant expansion in the capacity of each of our electricity systems, thus satisfying the maximum demand of the country.

However, the regulatory framework of the sector has shown significant weaknesses, which have become clear when particular situations have needed to be addressed, such as the severe drought that resulted in electricity rationing in the late 1990s, the unexpected restrictions in the supply of natural gas from Argentina from 2004 onwards, and the lower rainfall of recent years. In the face of these events, our country has undergone a transition to generation by power plants mainly based on coal and diesel. Thus, our energy matrix has come to increasingly rely on coal. This was the sector’s response to the complex energy situation that Chile had to face over the last decade, but it was not the result of a long-term strategy or plan.

Likewise, the temporary dependence of our matrix on certain sources of fuel, particularly Argentine gas, resulted in the lack of consideration of long-term guidelines or the expansion of other sources of generation when planning and developing our electricity transmission infrastructure. This made the fragility of our electricity system very clear.
At the same time, Chilean society began to show increased concern about the configuration of our electricity matrix. Electricity projects began to cause a growing level of conflict and this increased the timeframes for implementing investments in the sector. As a result, there was a delay in the setup of important electricity infrastructure projects, with the corresponding associated risks to the security of our energy matrix. Thus, we are now faced with a scenario of ongoing litigation on electricity matters, with the consequent uncertainty for both investors and society.

All of these facts have led us to the conclusion that it is imperative to focus our efforts and work hard on developing an action plan to deal with the different challenges presented by this sector in the medium- and long-terms, without neglecting the issues we are currently facing, which must be addressed in good time. We have made it a priority to work in partnership with the Ministry of Environment to review the existing environmental policy processes and instruments in this area with the aim of incorporating new parameters and greater information about the real possibilities for electricity development, the costs and impacts involved and to provide more public dialogue channels and more in-depth information to society. This will contribute to improve environmental management in this sector as well as the decisions made on the location of projects, while protecting our environmental heritage, generating informed debate and providing a greater level of legal certainty to the approval processes.

In the meantime, also with the aim of strengthening our electricity system in the long term, we must continuously review the design and operations of the existing institutions in order to ensure that these institutions are effectively complying with the purposes legally assigned to them. The complexity of our electricity systems, the growing need to incorporate competency, transparency, increased security and reliability variables and the conviction that moves us to promote the development of clean and efficient energy sources demand a revision of the structure, functions and roles of various relevant institutions in the sector.

A long-term vision also requires us to move forward in creating the conditions for making our matrix ever-cleaner, more diverse and secure, involving the greatest possible number of...
stakeholders in each segment and having networks that are sufficiently robust and have enough margin. It is, therefore, essential to have a national strategy which holistically includes each of the elements necessary for achieving a long-term clean, secure and competitive electricity matrix. This is the commitment we made when we developed this National Energy Strategy (Estrategia Nacional de Energía, ENE).

The objective of the National Energy Strategy or ENE is to adopt a clear position regarding the future development of our energy matrix, as well as to outline the main guidelines and measures we will adopt in order to implement it. The ENE we are now presenting is focused primarily on the development of our electricity matrix, establishing the main course of action in our Government’s public policy on this matter. The ENE seeks to generate a commitment by the State in the definition and future development of electricity in Chile, taking into account public participation mechanisms, the balance between national and regional growth and the necessary safeguards of the environment.

Combining the SIC and SING, our current electricity matrix is made up of 3% from NCRE sources, 34% from hydroelectricity and 63% from thermoelectricity. Our objective for the future composition of the matrix is to accelerate the incorporation of NCRE sources and to strengthen the development of hydroelectricity.

Law 20.257 to promote Non-Conventional Renewable Energy sources sets the target of 10% for NCRE by 2024 (in the nominal frameworks included in this law). Our Government considers that this target is insufficient. We will, therefore, perfect current legislation, making progress in the design and implementation of alternative promotion mechanisms, as well as building Pilot Projects. With the measures defined in this strategy, we are looking to more than double this share of NCRE sources in our matrix in the next decade.

Similarly, we aim for traditional hydroelectricity to achieve 45% to 48% of the matrix share in the same period, with the remaining share obtained from thermoelectric sources.
Our Government has decided that it will not make any decisions regarding the use of nuclear energy to generate electricity. However, we realize that it is responsible and necessary to continue the studies and technical exchanges with developed countries to allow future Governments to take a stand on this matter with the participation of an adequately informed society.

In order to guide the electricity matrix of the SIC and SING in this direction – without forgetting the particular aspects of our medium-sized systems in Aysén and Magallanes – and with the conviction that we must address present weaknesses and fragilities, the National Energy Strategy, which currently analyzes electricity issues, is based on the following fundamental pillars.

First: To make a real commitment to energy efficiency, establishing it as a highly important public policy through which we will seek to reduce consumption and unlink growth and energy demand.

Second: To ratify the need to increasingly incorporate non-conventional renewable energies into the Chilean electricity matrix.

Third: To clearly and decidedly strengthen traditional renewable energy sources. To this end, our country must make the most of its comparative advantages, reducing its external dependence and limiting the increase in greenhouse gas emissions.

Fourth: To boost the development of our transmission system, strengthening its design and solidity.

Fifth: To address the different challenges presented by the market and electricity distribution.

Sixth: To promote sustained progress in the development of international inter-connections.
The design of each of these pillars is inspired by fundamental principles, such as the long-term reliability of the system; access and equity for everyone in Chile; the vision of the regions; the promotion of a market with greater levels of competition and lower prices; national energy security and independence; efficiency and social commitment; environmental protection; spaces for international integration and technological innovation, among others.

Besides presenting the key characteristics of each of these pillars, this document also introduces some legal, regulatory and administrative measures and certain public-private initiatives which are necessary for its implementation.
I. Growth with Energy Efficiency
A State Policy
The need for greater levels of energy efficiency (EE) has never been as clear as it is now. Factors such as the high energy prices, growing concern for the environment and energy security in Chile have contributed to a growing awareness of the need for further developing EE.

However, this awareness must translate into concrete actions and energy efficiency must become a normal habit for all public and private stakeholders and throughout the residential, commercial, mining, transport and industrial sectors.

Recent experience demonstrates that efforts have been made to develop energy efficiency. First, the National Energy Efficiency Program (Programa País de Eficiencia Energética, PPEE), which was implemented between 2005 and 2010, put EE on the agenda as an issue of national importance. Second, the recent creation of the Chilean Agency for Energy Efficiency (Agencia Chilena de Eficiencia Energética) strengthened public-private commitment on this matter. However, making energy efficiency one of the cornerstones of this strategy requires avant-garde institutions with greater public engagement in order to meet the new challenges.

Technical reports and key stakeholders agree on one fundamental fact: Energy efficiency must become an active pillar in the national strategy in order to address growing energy demand and its development will only be possible with the Government’s effective commitment during its implementation.

Because of this, the Government’s energy strategy cannot be limited solely to facing the challenges presented by traditional energy generation, nor to exclusively promoting the development of new sources of energy. It is essential for this strategy to incorporate, as a fundamental principle, the efficient use of energy, which will allow us to begin to separate economic growth from increased consumer demand.

To achieve this, we believe it is essential to set a specific goal for energy efficiency that coordinates all the available measures to attain it. In accordance with studies that have been carried out and in order to guarantee an adequate safeguarding of productivity, our proposal is to reach by 2020 a decrease of 12% of the final energy demand projected for that year.

To that end, we believe it is necessary to adopt the following measures:
The Energy Efficiency Action Plan is intended to be a guide for the public and private sectors to take the necessary actions to achieve the great potential of Energy Efficiency identified for this decade and the next.

As mentioned before, the Action Plan has the goal of attaining a 12% decrease in the projected energy demand for 2020. This will allow for an estimated reduction of more than 41,500 Tcal (Teracalories) by 2020, which represents 1,122 MW of displaced electricity and 4,150,000 non-consumed Toe (Tonnes of Oil Equivalent), with the consequent economic benefits for Chile. Achieving this goal will generate additional benefits such as employment creation, higher levels of industrial production and lower levels of CO2 emissions, among others.

The Action Plan measures aim to incorporate elements of energy efficiency into the different productive sectors. In the construction sector, including social housing, the Action Plan aims to improve thermal insulation for buildings that were developed without energy efficiency criteria, to design buildings with high EE standards and to offer construction products and services with efficiency criteria, etc.

For the industry and mining sector, the Action Plan will encourage the adoption of energy efficiency measures through developing and implementing energy management systems, promoting cogeneration and incorporating efficient technology and technical assistance into projects.

In the transport sector, data on energy use will be compiled and systematized, while encouraging greater efficiency in freight and passenger transport and promoting a vehicle labeling system that will set minimum energy efficiency standards.

The demand for modern appliances with low energy consumption will be promoted through the establishment of applicable minimum efficiency standards and incentives for replacing old appliances with more energy efficient ones.

An Energy Efficiency Seal will be created to identify and award companies that lead the way in developing energy efficiency on a national level. This will allow them to reduce their energy costs, increase their competitiveness and reduce their emissions.

Our aim is to make this seal the registered trademark for efficient companies. The attainment and category of the seal will be determined by parameters such as the implementation of energy management systems, the quantity and type of projects developed and the rate of reduction in energy consumption. This seal will cover specific categories, depending on the productive sector of the company.
Minimum Energy Performance Standards (MEPS)

We will establish Minimum Energy Performance Standards (MEPS) that must be met by products, equipment, appliances, materials and other products that use any kind of energy, in order to be sold in Chile. This measure will limit the maximum amount of energy that can be consumed by a specific product, while ensuring its optimum performance and not affecting user satisfaction is.

We will also increase the labeling of appliances to inform consumers about the energy performance of the products on sale, thus incorporating energy efficiency into consumer decisions.

Efficient Residential and Street Lighting Programs

These programs, which complement the Minimum Energy Performance Standards, seek to accelerate the transition to more efficient lighting technologies for the residential and public sectors (especially municipalities). Different stages are envisaged to benefit the most vulnerable households in the country and society at large through promotion and education activities on the benefits of adequate energy consumption to stimulate and accelerate the transition to more efficient technologies and appliances.

The Creation of the Interministerial Commission for the Development of Energy Efficiency Policies

Public energy efficiency policies cannot be conceived in isolation, but should instead be established across sectors. Coordination between public organizations and ministries is key to achieving the estimated potential energy saving for each consumer sector, be it public, residential, commercial, transport, etc.

For this purpose, we will create an Inter-Ministerial Commission for the Development of Energy Efficiency Policies, which will integrate the measures or agreements adopted into the sector policies of each participating entity or institution. This Commission will periodically report on its management directly to the President of Chile.
II. The Take-off of Non-Conventional Renewable Energy
A Pending Challenge
Chile shows significant potential in renewable resources, which can be exploited to generate electricity, heat and biofuels. However, the development of non-conventional renewable energy (NCRE) sources has not made enough progress as they currently only account for approximately 3% of electricity production. In fact, despite being approved by Chile’s Environmental Impact Assessment System (Sistema de Evaluación de Impacto Ambiental, SEIA), many investment projects associated with these types of technologies have not been implemented for a variety of reasons.

Indeed, the development of NCRE in Chile is faced with a number of obstacles that have prevented or hindered the realization of such projects on a large scale. The most common barriers or obstacles include the high cost of the initial investment, the limited possibilities for financing, difficulties in the access and connection to transmission lines and in signing long-term contracts.

In conclusion, the use of NCRE presents economic and technical challenges that must be addressed without delay, to enable a successful transition of the matrix towards a more intensive use of these energies.

The Government intends to use a series of measures to accelerate the incorporation of NCRE so they can in time have a larger share of the total matrix.

However, we must bear in mind that these energy sources must be integrated in a serious and responsible manner, and their effects must be measured. Therefore, this goal must be backed up with supporting data and technical projections and should not neglect important parallel objectives, such as ensuring an accessible, secure and inexpensive supply of energy through competitive projects and technologies.

Along the same line, it is also necessary to consider other variables such as not stretching the generation transmission and investment plan too thin and to analyze the potential cost overruns in the investment, operations and development of the system.

To achieve this goal, we propose the following measures in the National Energy Strategy:

![Graph showing the status of various energy types in Chile](image-url)
Tender Mechanism to encourage the Development of NCRE

In order to give further impetus to the development of NCRE, we will improve upon current legislation.

Parallel to the scheme included in the laws on this topic, and with the aim of attracting investors interested in developing NCRE projects, open tender processes will be conducted by NCRE blocks, in which participating generators may be awarded a State subsidy to improve the conditions of energy sales which will be defined according to the bids submitted. This will diminish the risks to which such projects are currently exposed. Through this measure, we will support those new technologies that are not currently competitive enough to develop. This mechanism will complement current legislation on the matter.

Geo referenced Platform – Economic Potential for NCRE Projects

Public tools providing up-to-date information will be strengthened and implemented to guide and facilitate private investment decisions in NCRE projects. A georeferenced platform will be created to compile dynamic information to assess the viability of an NCRE project. This will include a portfolio of NCRE projects; a database of resource potential and State land available for the development of such projects; level of industrial, commercial and residential energy demands; information on roads and electricity infrastructure; environmental protection areas and information on land planning to identify the availability of compatible lands with other productive uses. This platform will be integrated with the platforms of other State organizations that have the authority to manage national land, such as the Ministry of National Public Lands and those available on the SEIA, in order to offer certainty regarding the feasibility of NCRE projects and to take greater advantage of public lands for energy development.
As it is important and necessary that the Government establishes policies regarding NCRE and that these policies are implemented for the benefit of Chile, we will propose, in addition to the current Renewable Energy Center (Centro de Energías Renovables, CER), a new public institutional framework to promote and facilitate the conditions for establishing non-conventional renewable energy in Chile.

**Development and Financing**

This line of action will focus on working with other public institutions to design and strengthen development mechanisms, consisting of the creation of effective coverage and insurance instruments, new lines of credit with international financing and feasibility studies, among other economic incentive measures.

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**Strategies for Technology**

Each type of NCRE technology faces different obstacles for its implementation, therefore requiring a different long-term strategy for each of these energies: solar, wind, bioenergy, biomass, geothermal, mini-hydro and tidal. Under this strategy, we will work together with the public and private sectors, researchers and civil society representatives to develop measures to address the obstacles to each of these technologies, specifically taking into account aspects such as research, development and innovation (R+D+I), resource exploration, development tools, funding and regulatory framework.

With this in mind, and acknowledging how attractive geothermal energy is for our country due to its potential and high plant factor, we are preparing a new regulatory base to encourage investment in this renewable resource.

In addition, a new subsidy and incentives plan will be implemented for pilot NCRE projects to further develop various technologies in a national context, thus attaining fundamental practical knowledge to recognize Chile’s technical and economic bounties for taking advantage of its own renewable resources. Hopefully, the development of these pilot projects will enable the experience and knowledge of international companies to be integrated with the development of local technologies, driving innovation in Chile’s NCRE industry.
III. The Role of Traditional Energy
Greater Prevalence of Water Resources, Less External Dependence
From the far north to the south, Chile’s water resources have great potential – particularly, from the Maule region to the basins separating the Aysén and Magallanes regions. It is estimated that Chile’s hydro potential, both in reservoir and run-of-river projects, could easily exceed 9,000 MW. This is a clean and renewable resource which we cannot ignore and which is and will continue to be a fundamental component of our electricity matrix.

We are firmly convinced that the hydroelectric component of the matrix must continue to grow steadily and that hydroelectricity will be the main source of electricity for Chile in the coming decades.

The development of projects must be accompanied by mitigating measures and requirements of the highest level. Building any kind of electricity generation project today entails much greater consideration of the fundamental environmental, social and economic variables than before. Specifically, we believe that in order to continue developing hydroelectricity, not only must there be a decision to demand that projects comply with current environmental regulations, but there must also be a revision of the processes for ensuring transparency of information and we must work with local communities in order to continue to strengthen their participation.

A special plan will, therefore, be developed to safeguard the Chilean Patagonia, broadening its protection and excluding any generation and transmission initiatives from areas with vast resources in exceptional natural conditions.

Without a doubt, the development of hydroelectricity requires greater coordination and planning for its transmission. This not only involves decisions regarding the large electricity generation centers, but also practical solutions for the delays to smaller projects trying to connect to the grid, which is currently very difficult for them.

Thus, as part of the reforms to the transmission system, we will generate the conditions to overcome these obstacles and adopt all the measures that will enable us to have a more robust, coordinated and coherent system.
The Role of Fossil Fuels in a Cleaner Matrix

This Government’s decision to confirm the importance of hydroelectricity for Chile and consider it a key sector in the development of our electricity matrix, together with the development of NCRE, goes hand-in-hand with the goal of having a cleaner, more autonomous matrix which is less dependent on imported fossil fuels. Chile must exploit its comparative advantages and prioritize energy development, from both traditional renewable energy sources, such as water, and non-conventional renewable energy sources, such as geothermal, solar and wind energy.

However, our vision of the matrix in the future cannot do without coal, among other fossil fuels. Coal provides both technical and economic stability to our electricity system, thereby bringing necessary certainty to the adequate development of the electricity matrix. Indeed, coal-based electricity generation has been with us for a large part of our history and this will continue to be the case in the coming decades. In the past five years, a number of coal-based electricity generation projects were approved, which are now in operation or under construction. Additionally, several projects are in the pipeline for the coming years and these will be necessary for ensuring an adequate supply to cover the projected immediate demand, as well as contributing to security of supply and market competition.

All of these projects must comply with the highest environmental standards and requirements.

Regardless of the progress made in terms of the environmental regulations applicable to these projects, such as the emission standards for power plants issued in 2011 by our Government, as well as in technology, we must strengthen our action to reduce CO2 emissions and increase our efforts to mitigate the influence of the global economy on the price of energy in Chile.

Parallel to this, it is important in the medium and long terms to advance with the technical and economic validation of technologies for CO2 capture and storage, as well as introducing coal gasification technologies for use in combined cycle plants, with the aim of ensuring that the use of coal in Chile’s electricity matrix is more efficient and sustainable.

In recognition of the fact that thermoelectric technology is used to produce electricity in Chile, it is imperative to develop land information platforms in order to define areas where the development of thermoelectric power plants will be allowed as well as exclusion zones. This will help ensure that the environment and areas of tourist, social or economic interest are adequately safeguarded while providing investors with a greater degree of legal certainty that they will be able to
obtain permits for projects that comply with the respective standards. To this end, we will work together with the Ministry of Environment and Ministry of National Public Lands.

An important decision by this Government is to design mechanisms that will encourage the adoption of increasingly clean and efficient technologies. We will also study the possibility of incorporating tax instruments to reduce the negative externalities and promote the positive externalities and social benefits of projects, in order to redirect our electricity matrix.

We must also recognize the growing presence of liquefied natural gas (LNG) as an alternative source of energy in the long term. There is, in fact, significant potential to further develop our LNG regasification plants. The availability of this resource and its growing global share, together with new techniques and processes of exploration and production, show that LNG is an attractive alternative for the decades to come. Also in this field, both the new techniques and processes for exploration and production as well as non-conventional resources show novel alternatives for the future. Therefore, we will also promote both traditional and innovative exploration processes in Chile.
IV.

A New Focus on Transmission
Towards a Public Electricity Highway
Electricity transmission infrastructure is essential for energy development, both for reliable electricity supply and for competition and access to various generation sources. Electricity transmission in Chile today presents significant degrees of fragility and the completion of projects in this area faces serious difficulties, potentially affecting the entire system. This situation, together with considerable delays in the completion of important transmission projects, has resulted in a complex scenario for generation investors and for the overall security of the country’s electricity system.

At the same time, the access to electricity networks is difficult and limited for small generators, and in particular for renewable resource generators located far from the main transmission lines or other investors who wish to be connected to the distribution networks, in a scenario where there is an ever-increasing need for their contribution to the electricity supply.

This makes it essential for us to have a long-term vision which takes into account all the electricity networks needed by the country over its entire length and breadth, with sufficient security margins that will provide certainty to the various projects and will allow NCRE generation sources to be connected.

In this context, the Government considers it essential to create a new, more secure and robust scheme for the development of electricity networks, which will facilitate access for all investors in generation projects and foster initiatives using renewable energy sources.

Within this framework, the State will play a key role in planning transmission systems, dimensioning networks and defining their territorial scope, creating utility corridors, and improving legislation governing concessions and easements.

It is, therefore, essential to improve our current regulations governing trunk transmission, sub-transmission and additional transmission, in order to ensure the coherence necessary to achieve this new transmission approach.

In this new design, the studies we are carrying out regarding whether or not it would be advisable to interconnect the Central Interconnected System (SIC) and the Norte Grande Interconnected System (SING) are of great importance in order to increase the security of the system and make better use of energy resources. Our Government is analyzing this possibility with special interest, considering the likely economic and institutional advantages for the sector.
Improving Procedures for Granting Electricity Concessions

With the aim of making the electricity concession process more fluent and suited to the challenges of generation and system demand, we will present to the National Congress observations on the bill on this subject which is presently being discussed, with the objective of making the procedure for obtaining electricity concessions faster and more precise, while safeguarding the legitimate rights of third parties. Likewise, modifications will be made parallel to the current regulations in all areas which do not fall into the legal domain.

Creation of Utility Corridors

The State will be able to declare Utility Corridors, which may be expropriated or be the object of easements in the public or national interest, based on information provided by studies and inter-ministerial coordination.

To implement this concept, current electricity regulations will be modified, creating a specific regulation for facilities listed as being of public or national interest, which would make use of these corridors. Some of the aspects to be dealt with by the new regulations would be: The remuneration regime for these facilities, their margin dimensions, and territorial planning for expanding the transmission system through their development.
Regulatory Changes in Additional and Trunk Transmission and in Sub-transmission

These regulatory changes are important for imparting consistency to the regulatory framework governing transmission systems, under the new public electricity highway approach. They are also necessary to connect generation projects to the electricity system and, therefore, to achieve our target of ensuring competitive generation prices by eliminating barriers. Furthermore, they are necessary to provide a regulatory framework for the new approach of a public electricity highway for transmission facilities.

In trunk transmission, regulatory change goes hand-in-hand with the new concept of a public electricity highway, which will require a review of the systems for assigning payment to facilities and of the objectives and structure of trunk transmission studies.

In the field of additional transmission, definitions will be made for aspects such as the conditions for open access by third parties to transmission lines under this classification, the minimum asset valuation conditions for this open access, and the corresponding payment scheme.

Finally, in sub-transmission, work will be done on improving the mechanisms for connection to these networks as well as the long-term security and development of these facilities.

Facilitating Connection for Small Generators and Intelligent Networks

We will improve existing regulations governing the connection of small generators, in order to facilitate the connection of their projects. The transparency mechanisms governing the information provided by distribution companies and the costs associated with that information will be improved, incorporating processes which will give greater participation and oversight to the Superintendency of Electricity and Fuels (Superintendencia de Electricidad y Combustibles, SEC). Information guides will be created for investors interested in connecting at the distribution level. The procedures for determining the costs and benefits for the distribution network resulting from the connection of a small generator will be modified.

Progress will be made in implementing the concept of intelligent networks as broadly as possible, in order to contribute to the introduction of distributed generation, among other things. To this end, the technical and economic viability of the concept will be analyzed, taking into account developments, implementations and local and international experience of pilot projects, and trying above all to evaluate the advantages of implementing this new technology (offering both a social and a private benefit) in the Chilean market.
V. Towards a More Competitive Electricity Market
Chile was a world pioneer in liberalizing its electricity market, being the first country in the world to privatize the electricity sector. This enabled the country to increase the installed capacity of the SIC by four times and that of the SING by six times in the last twenty years. The result was the creation of a market that has been able to meet the maximum demands on the electricity system, although it is not free of difficulties, as has been already stated in this document.

However, as mentioned before, a series of weaknesses may be observed which need to be addressed now in order to ensure an electricity market with greater levels of competition, security and reliability. This document, describes a series of measures whose overarching objective, beyond meeting the specific purposes of the pillar in which they are included, is the desire to introduce more competition into the sector in the medium and long terms. It is our conviction that the regulatory framework should encourage and facilitate the entry of new stakeholders into the system, with the resulting diversification of participants, thereby progressing towards a more competitive and efficient electricity market, in which the market operator can make independent decisions on matters affecting both the security of supply and the levels of competition and transparency prevailing in the electricity market.

At the same time, it is essential to improve the tender mechanisms for regulated clients since, on the one hand, the existing mechanism does not provide efficient long-term signals to the end client, and on the other hand, contrary to expectations, this mechanism has not led to large numbers of new stakeholders entering the market. The existence of contracts with electricity distributors affected by generator breakdown, and their impact on the market, stresses the need for a change of course on this matter.

It is, therefore, natural to adapt the electricity price conditions for end consumers, in a scenario in which technology has evolved sufficiently to allow clients the flexibility of choosing between several economic and technical alternatives to meet their electricity needs.
The Chilean electricity market requires an organization with the quality, independence and strength necessary for the physical and economic operation of the electricity system. Likewise, the need for transparent information and effective market supervision will provide the necessary foundations for institutional reform of the organization responsible for the security, economic operation and access to the electricity system.

Independent Operation Centers will be created for each electricity system, replacing the Economic Load Dispatch Centers (CDEC). They will be legal entities with their own assets, an autonomous governing structure and clearly defined responsibilities. The objective will be to guarantee the independence and proper functioning of electricity market operators, to ensure that operational decisions on electricity facilities, as well as decisions leading to economic transfers between market operators, are timely and transparent for all market agents.

These new institutions will also have clear roles in the planning of transmission systems, contributing to the development of electricity transmission infrastructure and to the security and sufficiency of the system in the long term.
Secure and Competitive Electricity for Distribution

The regulation of supply tenders will be improved, with the objective of generating the most effective mechanisms for granting energy blocks at prices which reflect long-term conditions, damping uncertainty in supply and demand and reducing the negative effects of speculative actions.

In addition, the minimum notice periods for calls to tender will be modified and tender schemes will be designed with shorter contract periods. The standardization of the resulting contracts will also be studied.

Furthermore, specific measures will be established to introduce greater competition at the level of prices for end consumers through the design of effective mechanisms for tariff flexibility to regulated clients, allowing these to manage and optimize their electricity consumption. In the same context, one of the proposed measures is to lower the limit defining the classification of free clients from 500 kW to 100 kW.

Likewise, an assessment will be made on the feasibility of implementing the freedom to choose electricity suppliers through the introduction of the “sales agent”, establishing the necessary guarantee and verification schemes to ensure that the contracts signed are duly backed by production. All these changes will be implemented gradually in the retail market. In this respect, existing regulations will be reviewed to evaluate the separation of network activity from commercial activity in the distribution segment.

At the same time, distribution tariff calculation processes will be reviewed in order to implement any modifications needed to properly reflect business risks and improve tariff calculation procedures.

Consolidation of net Metering for Residential Generators

In order to consolidate distributed generation as an effective solution towards a more efficient electricity system with increased supply, a regulatory design incorporating Net Metering will be implemented after approval by Congress. The objective of this initiative is to allow end users (e.g. families or small businesses) to install technologies for generating electricity from non-conventional renewable energy sources in their homes or businesses. The energy generated by each of these small producers may be used for their own consumption or may be injected into the network, to the point where they may even receive a net payment from the distributor for the electricity they deliver.
VI. Sustained Progress with the Options for Regional Electricity Interconnection
Chile has limited experience in international energy integration. There are several reasons for this and the flawed experience of gas integration with Argentina clearly has not helped. All in all, it is important to understand the great benefits that electricity integration would bring, as demonstrated by many cases in the region and around the world.

In the medium and long terms, regional electricity integration will not only contribute towards greater security of supply, but will diversify the energy matrix, increase competition in the electricity market, reduce costs, ensure the full use of infrastructure and diminish local pollution and greenhouse gas emissions.

There are many possibilities and points for interconnection that are being analyzed internationally. The alternatives we must study include, among others, the Deep Integration Agreement which our country definitely supports; the efforts of Colombia to build lines towards Central America and the Southern Cone; a greater connection between Chile and Argentina at different points along our borders and continuing to deepen our links with Peru, Bolivia and Ecuador.

In the medium term, Chile aspires to work together with other countries in the region to develop an interconnection infrastructure which brings benefits to all parties involved. To this end, joint operation rules and electricity interchange mechanisms must be designed and a framework of rights and responsibilities must be established to promote investment in international transmission links.

We believe that regional electricity interconnection will occur within a framework of respect and observance of a joint legal institution and the existence of benefits for all participants. Thus, we will be able to aspire in the long term to develop a systemic integration, in which stakeholders can freely draw up energy contracts, promoting reliable joint operations and improving the conditions for electricity consumers across the region.
Implementing the Strategy

The objective of this document is to explain the Government’s vision with regards to electricity and to describe the challenges which will be addressed immediately by this Administration. It also summarizes what we consider to be the priorities for the sector and the guidelines and concrete solutions that must be adopted to deal with the sustained growth in energy demand and to provide the security and solidity our system requires.

We will work with a range of stakeholders at the national and regional levels in order to implement the measures that this strategy demands. All the actions, projects, regulations and public policies adopted as a result of this document will be shared in a transparent and timely manner with civil society, through different participation mechanisms both locally and nationally in such a way that the different social stakeholders can get to know the assumptions, supporting data and technical facts behind them. We place great value on the contributions that civil society and different technical entities (such as academic organizations, research centers, consumers’ associations, business associations and public institutions, among others) can make towards the topics outlined in this document, as we are aware of the extraordinary value that society has placed on different aspects of the public energy policy. We also know that to achieve this we must be sufficiently transparent, providing the information needed to enable open and well-informed dialogues.

This document constitutes an energy roadmap for the coming years and its preparation included valuable contributions our Government has received from intermediate groups, consultants, commissions and other social and citizen sectors. We know, however, that this cannot be an isolated effort. Chile needs long-term institutions that will periodically review, study and establish the objectives for the energy matrix of our country, incorporating technical, economic and social criteria. This should involve experts, related organizations, civil society and guidance from the authorities. We have indeed confirmed the need to outline the pillars for Chile’s long-term energy policy and vision, but we also know that this process will require revisions and assessments on an ongoing basis to incorporate changes and address new challenges or needs that may arise in the future.

We are firmly convinced that only in this way will we build a matrix which takes into account the main concerns of society and the technical, economic and political support it requires. Thus, the energy matrix will have legitimacy and the policy vision of the respective Government will be validated.