ΡΥΘΜΙΣΤΙΚΗ ΑΡΧΗ ΕΝΕΡΓΕΙΑΣ
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ΑΠΟΦΑΣΗ ΥΠ' ΑΡΙΘΜ 429/2015

Έγκριση του επικαιροποιημένου σχεδίου προληπτικής δράσης (έκδοση Νοεμβρίου 2015) σύμφωνα με τον Κανονισμό 994/2010 του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 20ης Οκτωβρίου 2010 σχετικά με τα μέτρα κατοχύρωσης της ασφάλειας εφοδιασμού με αέριο και την κατάργηση της οδηγίας 2004/67/ΕΚ του Συμβουλίου

Η Ρυθμιστική Αρχή Ενέργειας

Κατά την τακτική συνεδρίασή της, στην έδρα της, την Δευτέρα 16 Νοεμβρίου 2015 και

Λαμβάνοντας υπόψη:

1. Τις διατάξεις του ν. 2773/1999 *«Απελευθέρωση Αγοράς Ηλεκτρικής Ενέργειας-Ρύθμιση θεμάτων ενεργειακής πολιτικής και λοιπές διατάξεις»* (ΦΕΚ Α΄286), όπως ισχύει.
2. Τις διατάξεις του ν. 4001/2011 «*Για τη λειτουργία των Ενεργειακών Αγορών Ηλεκτρισμού και Φυσικού Αερίου, για Έρευνα, Παραγωγή και δίκτυα μεταφοράς Υδρογονανθράκων και άλλες ρυθμίσεις»* (ΦΕΚ Α΄ 179) (εφεξής ο «Νόμος»), όπως ισχύει.
3. Τις διατάξεις του Κανονισμού (ΕΕ) αριθμ. 994/2010 του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 20ης Οκτωβρίου 2010 σχετικά με τα μέτρα κατοχύρωσης της ασφάλειας εφοδιασμού με αέριο και την κατάργηση της οδηγίας 2004/67/ΕΚ του Συμβουλίου (εφεξής ο «Κανονισμός»).
4. Το εγχειρίδιο με τίτλο *«Preventive Action Plan and Emergency Plan Good Practices»* που καταρτίστηκε από το Joint Research Center for Energy and Transport της Ευρωπαϊκής Επιτροπής.
5. Το υπ' αριθμ. Ο-49497/14.12.2011 έγγραφο της ΡΑΕ προς την Ευρωπαϊκή Επιτροπή με θέμα *«Report on the assessment of risk for the security of gas supply in Greece, pursuant to article 9 of Regulation 994/2010/EC»*.

6. Το εγκεκριμένο, με την απόφαση 141/2013 της ΡΑΕ, σχέδιο προληπτικής δράσης σύμφωνα με τον Κανονισμό 994/2010 του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 20ης Οκτωβρίου 2010 σχετικά με τα μέτρα κατοχύρωσης της ασφάλειας εφοδιασμού με αέριο και την κατάργηση της οδηγίας 2004/67/ΕΚ του Συμβουλίου.
7. Την από 26.03.2015 εγκεκριμένη μελέτη της ΡΑΕ *«Επικαιροποιημένη Εκτίμηση Επικινδυνότητας ως προς την Ασφάλεια Εφοδιασμού της Ελλάδας με φυσικό αέριο», η οποία απεστάλη στην Ευρωπαϊκή Επιτροπή*.
8. Τη δημόσια διαβούλευση του καταρτισθέντος επικαιροποιημένου σχεδίου προληπτικής δράσης κατά το χρονικό διάστημα από τις 16.9.2015 έως τις 02.10.2015.
9. Τις απόψεις που υποβλήθηκαν στο πλαίσιο της ως άνω διαβούλευσης με το έγγραφο της εταιρείας «ΔΕΠΑ Α.Ε.» (ΡΑΕ Ι-199343/02.10.2015).
10. Το από 18.09.2015 ηλεκτρονικό έγγραφο της ΡΑΕ προς τις Αρμόδιες Αρχές της Βουλγαρίας και της Ρουμανίας, με κοινοποίηση στην Ευρωπαϊκή Επιτροπή, με θέμα "*Updated PAP and EP under Regulation 994/2010"* (ΡΑΕ Ο-62152/22.09.2015), με το οποίο κοινοποιήθηκε το επικαιροποιημένο σχέδιο προληπτικής δράσης στα γειτονικά Κράτη Μέλη κατά τα οριζόμενα στην παράγραφο 2 του άρθρου 4 του Κανονισμού 994/2010.

Σκέφτηκε ως εξής:

Α. Σχετικές διατάξεις

Επειδή, σύμφωνα με τα οριζόμενα στις παραγράφους 1 και 2 του άρθρου 4 του Κανονισμού:
«1. *Η αρμόδια αρχή κάθε κράτους μέλους, έπειτα από διαβούλευση με τις επιχειρήσεις φυσικού αερίου, τις σχετικές οργανώσεις που εκπροσωπούν τα συμφέροντα των οικιακών και βιομηχανικών πελατών και την εθνική ρυθμιστική αρχή, εφόσον αυτή δεν είναι η αρμόδια αρχή, καταρτίζει σε εθνικό επίπεδο, με την επιφύλαξη της παραγράφου 3: α) προληπτικό σχέδιο δράσης που περιέχει τα μέτρα τα απαιτούμενα για την εξάλειψη ή τον μετριασμό των επισημανθέντων κινδύνων, σύμφωνα με την εκτίμηση του κινδύνου που διενεργείται σύμφωνα με το άρθρο 9 και β) […].*
2. Πριν από την έγκριση ενός προληπτικού σχεδίου δράσης και […] σε εθνικό επίπεδο, οι αρμόδιες αρχές ανταλλάσσουν, μέχρι τις 3 Ιουνίου 2012, τα προληπτικά προσχέδιά τους δράσης και τα προσχέδια τους έκτακτης ανάγκης και προβαίνουν σε διαβουλεύσεις μεταξύ τους στο κατάλληλο περιφερειακό επίπεδο και με την Επιτροπή, προκειμένου να διασφαλίσουν ότι τα προσχέδια και τα μέτρα τους δεν έρχονται σε αντίθεση με προληπτικό σχέδιο δράσης και σχέδιο έκτακτης ανάγκης άλλου κράτους μέλους και ότι συμμορφώνονται με τον παρόντα Κανονισμό και με άλλες διατάξεις της Ενωσιακής Νομοθεσίας. Τέτοιες διαβουλεύσεις πρέπει να διενεργούνται ιδίως ανάμεσα σε γειτονικά κράτη μέλη, κυρίως ανάμεσα σε απομονωμένα συστήματα που αποτελούν νησίδες αερίου και τα γειτονικά τους κράτη μέλη, και μπορούν να καλύπτουν για παράδειγμα εκείνα τα κράτη μέλη που ορίζονται στον ενδεικτικό κατάλογο του Παραρτήματος IV».

Επειδή, σύμφωνα με τις διατάξεις της παραγράφου 5 του άρθρου 4 του Κανονισμού: *«Το αργότερο έως τις 3 Δεκεμβρίου 2012, εγκρίνονται και δημοσιοποιούνται τα προληπτικά σχέδια δράσης […]. Αυτά τα σχέδια γνωστοποιούνται χωρίς χρονοτριβή στην Επιτροπή. Η Επιτροπή ενημερώνει την ομάδα συντονισμού για το αέριο. Οι αρμόδιες αρχές διασφαλίζουν την τακτική παρακολούθηση της εφαρμογής τέτοιων σχεδίων*».

Επειδή, σύμφωνα με τα οριζόμενα στην παράγραφο 6 του άρθρου 4 του Κανονισμού: «*Εντός τριών μηνών από την κοινοποίηση από τις αρμόδιες αρχές των σχεδίων που αναφέρονται στην παράγραφο 5: α) η Επιτροπή εκτιμά τα σχέδια αυτά, όπως ορίζεται στο στοιχείο β). Για αυτόν τον σκοπό, η Επιτροπή συμβουλεύεται την ομάδα συντονισμού για το αέριο σχετικά με τα εν λόγω σχέδια και λαμβάνει υπόψη τη γνώμη της. Η Επιτροπή υποβάλλει έκθεση της εκτίμησής της όσον αφορά τα σχέδια στην ομάδα συντονισμού για το αέριο.*»

Επειδή, σύμφωνα με τα οριζόμενα στην παράγραφο 4 του άρθρου 5 του Κανονισμού «*Τα εθνικά και τα κοινά προληπτικά σχέδια δράσης επικαιροποιούνται κάθε δύο έτη, εκτός εάν οι περιστάσεις επιβάλλουν πιο συχνή επικαιροποίηση, και αντανακλούν την ενημερωμένη εκτίμηση του κινδύνου*».

Επειδή, σύμφωνα με τα οριζόμενα στην παράγραφο 3 του άρθρου 12 του Νόμου: «*Η ΡΑΕ ορίζεται ως η Αρμόδια Αρχή (Competent Authority) για τη διασφάλιση της εφαρμογής των μέτρων που ορίζονται στον Κανονισμό Ασφάλειας Εφοδιασμού του Φυσικού Αερίου 994/2010 του Ευρωπαϊκού Κοινοβουλίου και του Συμβουλίου της 20ης Οκτωβρίου 2010 (L 295). Τα οριζόμενα στις διατάξεις των άρθρων 6 και 7 του Κανονισμού 994/2010/ΕΚ ασκούνται από τη ΡΑΕ με την ιδιότητα της ως Αρμόδιας Αρχής. Η ΡΑΕ, με την ιδιότητα της αυτή, κατά την κατάρτιση και εφαρμογή του προληπτικού σχεδίου δράσης και του σχεδίου έκτακτης ανάγκης σε εθνικό και περιφερειακό επίπεδο, τα οποία προβλέπονται στην παρ.4 του άρθρου 4 του Κανονισμού 994/2010/ΕΚ, δύναται να αναθέτει τη διεκπεραίωση ειδικά οριζόμενων καθηκόντων που σχετίζονται με τα παραπάνω σε τρίτα πρόσωπα. Η ΡΑΕ παρακολουθεί και εποπτεύει την εκτέλεση των ανατιθέμενων καθηκόντων».*

Β. Κατάρτιση Σχεδίου Προληπτικής Δράσης

Επειδή, η ΡΑΕ, εφαρμόζοντας τις σχετικές διατάξεις του Κανονισμού μετά την ολοκλήρωση της επικαιροποιημένης μελέτης εκτίμησης της επικινδυνότητας σύμφωνα με τα άρθρα 4, παρ. 1 και 9 του Κανονισμού, και την κοινοποίηση της προς στην Ευρωπαϊκή Επιτροπή (σχετικό υπ΄ αριθμ. 7), εκκίνησε τη διαδικασία κατάρτισης επικαιροποιημένου σχεδίου προληπτικής δράσης, που έπεται της εν λόγω μελέτης, σύμφωνα με τα οριζόμενα στο άρθρο 5 του Κανονισμού και στο Νόμο.

Επειδή, η ΡΑΕ κατήρτισε επικαιροποιημένο προσχέδιο προληπτικής δράσης με βάση τα ως άνω δεδομένα και τη μεθοδολογία που περιγράφεται στο εγχειρίδιο του Joint Research Center for Energy and Transport της Ευρωπαϊκής Επιτροπής (σχετικό υπ' αρ. 5) και με γνώμονα την επίτευξη των ακόλουθων στόχων: α) Τον προσδιορισμό των σεναρίων με τον υψηλότερο βαθμό επικινδυνότητας (β) Το σχεδιασμό των δράσεων για την άμβλυνση των επιπτώσεων από την εμφάνιση των ανωτέρω σεναρίων, γ) Τον υπολογισμό της αποτελεσματικότητας κάθε δράσης, δ) Τον υπολογισμό της σχέσης κόστους και οφέλους της κάθε δράσης, ε) Την επιλογή των δράσεων με την καλύτερη σχέση κόστους – οφέλους, για την συγκρότηση στρατηγικών μέσω των οποίων επιτυγχάνεται το επιθυμητό πρότυπο ασφάλειας εφοδιασμού.

Επειδή, τα αποτελέσματα της ως επικαιροποιημένης μελέτης εκτίμησης της επικινδυνότητας (σχετικό υπ΄ αριθμ. 7), η οποία αποτελεί τη βάση των αναλύσεων του σχεδίου προληπτικής δράσης, δεν διαφοροποιήθηκαν ουσιωδώς σε σχέση με τα αποτελέσματα της προγενέστερης μελέτης (σχετικό υπ΄ αριθμ. 5), ενώ το σύντομο διάστημα (2 έτη) που μεσολάβησε από τις αναλύσεις (δεν επέφερε ουσιώδη μεταβολή στις απαιτούμενες παραδοχές των ποσοτικών (υπό στοιχεία γ, δ και ε) αναλύσεων της προηγούμενης παραγράφου. Κατά συνέπεια τυχόν επανάληψη των υπολογισμών δεν θα επέφερε μεταβολή στα αποτελέσματα και τα συμπεράσματα. Λόγω των ανωτέρω το σχέδιο προληπτικής δράσης επικαιροποιείται ως προς το περιεχόμενο του άρθρου 5 του Κανονισμού χωρίς την επικαιροποίηση των ποσοτικών αναλύσεων κόστους οφέλους, τα αποτελέσματα των οποίων θεωρούνται αμετάβλητα και σε ισχύ.

Επειδή, η ΡΑΕ, έθεσε σε δημόσια διαβούλευση το επικαιροποιημένο προσχέδιο προληπτικής δράσης (υπ΄ αριθμ 8 σχετικό) το οποίο κατήρτισε. Με την ολοκλήρωση της διαβούλευσης η ΡΑΕ οριστικοποίησε το προσχέδιο προληπτικής δράσης.

Επειδή, η ΡΑΕ, με το υπ΄ αριθμ. 10 σχετικό έγγραφό της διαβίβασε στις Αρμόδιες Αρχές της Βουλγαρίας και της Ρουμανίας, και κοινοποίησε στην Ευρωπαϊκή Επιτροπή, το υπό διαβούλευση προσχέδιο προληπτικής δράσης, σύμφωνα με τη διαδικασία της παραγράφου 2 του άρθρου 4 του Κανονισμού προκειμένου να διασφαλιστεί, πριν την έγκρισή του, ότι το εν λόγω σχέδιο, σε εθνικό επίπεδο, δεν έρχεται σε αντίθεση με τα αντίστοιχα σχέδια των γειτονικών κρατών μελών.

Επειδή, οι Αρμόδιες Αρχές της Βουλγαρίας και της Ρουμανίας δεν έχουν έως σήμερα διαβιβάσει στη ΡΑΕ οποιοδήποτε σχόλιο ή αντίρρηση επί του υποβληθέντος, με το υπ΄ αριθμ. 10 σχετικό έγγραφο της ΡΑΕ, προσχεδίου προληπτικής δράσης.

Επειδή, το τελικό σχέδιο προληπτικής δράσης (Έκδοση Νοεμβρίου 2015) με τίτλο «*Update to the Preventive action plan for enhancing security of supply of gas in the Greek National Natural Gas System (NNGS)»,* περιλαμβάνει τα ακόλουθα στοιχεία:

(α) Τα αποτελέσματα της επικαιροποιημένης εκτίμησης επικινδυνότητας.

(β) Στρατηγικές για την εκπλήρωση των κανόνων για την υποδομή και για τον εφοδιασμό, όπως ορίζονται στα άρθρα 6 και 8 του Κανονισμού, βάσει των αναλύσεων κόστους οφέλους που περιέχονται στην απόφαση 141/2013.

(γ) Επαρκή περιγραφή των υφιστάμενων και υπό σχεδιασμό υποχρεώσεων που επιβάλλονται στις επιχειρήσεις φυσικού αερίου.

(δ) Πληροφορίες σχετικά με τις υφιστάμενες υποδομές, καθώς και τις μελλοντικές αναβαθμίσεις τους στο βαθμό που αυτές αφορούν έργα για τα οποία έχει ληφθεί οριστική απόφαση για την υλοποίηση της επένδυσης.

Κατόπιν των ανωτέρω και σύμφωνα με αυτά:

Αποφασίζει

Στο πλαίσιο των αρμοδιοτήτων της κατά το άρθρο 12 του ν. 4001/2011,

1. Για την έγκριση του σχεδίου προληπτικής δράσης με τίτλο *«Update to the Preventive action plan for enhancing security of supply of gas in the Greek National Natural Gas System (NNGS)»*, το κείμενο του οποίου προσαρτάται στην παρούσα Απόφαση ως «Προσάρτημα» και αποτελεί αναπόσπαστο τμήμα αυτής.

2. Τη διαβίβαση, μέσω CIRCA του επικαιροποιημένου σχεδίου προληπτικής δράσης (έκδοση Νοεμβρίου 2015) στην αρμόδια διεύθυνση της Ευρωπαϊκής Επιτροπής και στις Αρμόδιες Αρχές της Βουλγαρίας και της Ρουμανίας.

3. Την ανάρτηση του επικαιροποιημένου σχεδίου προληπτικής δράσης στην ιστοσελίδα της ΡΑΕ.

Αθήνα, 16 Νοεμβρίου 2015

Ο Πρόεδρος της ΡΑΕ

Δρ. Νίκος Μπουλαξής

ΡΥΘΜΙΣΤΙΚΗ ΑΡΧΗ ΕΝΕΡΓΕΙΑΣ
REGULATORY AUTHORITY FOR ENERGY

Update to the Preventive action plan for enhancing security of supply of gas in the Greek National Natural Gas System (NNGS)

According to the provisions of articles 4 and 5 of Regulation 994/2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC

Athens

November 2015

REGULATORY AUTHORITY FOR ENERGY

PREVENTIVE ACTION PLAN

TABLE OF CONTENTS

1. Scope and methodology

Scope

This preventive action plan is prepared in accordance with Articles 4 and 5 of Regulation 994/2010 [1], and aims to provide the most suitable path towards fulfilling the risk criteria set out in the Risk Assessment, as well as the infrastructure and supply standards of the Regulation.

The Risk Assessment[1] [2] constitutes the starting point for the preventive action plan. In that document the most significant threats to the supply of gas to the Greek NNGS were identified. Scenarios were then built to simulate the realization of these threats. These scenarios were used as input to a mass balance analysis coupled with rules regarding the timing, the extent of the required load shedding, as well as the interruption sequence of customers belonging to four categories. The above analysis was used to calculate a series of indicators that helped us estimate the impact on the supply to protected customers, large industrial customers and Power Generation.

The preventive action plan starts from where the Risk Assessment left off. The results of the updated Risk Assessment ascertained the fact that the nature and the impact of the risks to the security of supply have not changed since 2011. Moreover the short and medium term strategies are to a large extent still in the implementation phase and the appraisal of their effectiveness is still not accurate enough. Due to the above the current update to the Preventive Action Plan will not include an update to the cost benefit analysis which identified the short and medium term strategies currently under implementation.

Contents

This document is an update to the Preventive Action Plan approved by RAE in 2013 (Decision 141/2013). The CBA found in that report is considered valid and therefore complementary to the present report.

The structure of the document is aligned with the requirements set in article 5 of Regulation 994/2010. The report starts with a short reference to the main findings of the updated risk assessment.

The report continues with the measures, volumes capacities and timing needed to fulfil the Standards set out in articles 6 and 8 of the Regulation.

The report concludes with an update of the strategies adopted in the Preventive Action plan approved in 2013, and the measures enacted in the course of their implementation.

[1] http://www.rae.gr/site/categories_new/gas/supply_sec/regulation.csp

2. Main findings of the Risk Assessment

The updated Risk Assessment provided very similar results to the 2011 analysis. In particular:

1. Under the current conditions, household consumers, small and medium-sized enterprises connected to a distribution network, as well as district heating installations that are not able to switch to alternative fuels, are not expected to suffer impacts on their supply, in any of the scenarios examined, as long as proper measures for managing the demand by Power Generation and Industry are applied.
2. The analysis of 16 scenarios, identified 3 scenarios with no impact at all, 5 scenarios entailing low-risk, 4 scenarios entailing medium-risk and 4 scenarios which are considered as high-risk.
3. The maximum daily and weekly demand can be satisfied by the current infrastructures.
4. The N-1 standard is not met by the existing infrastructures. It is expected that this standard could be satisfied through the application of market-based demand side management measures in the range of 3-4 mcm per day during the next three years.

The risk matrix

The crisis scenarios are placed unto the risk matrix according to the probability attributed to them and the severity of the impacts calculated. The impact severity was different in Power Generation and in Industrial customers for some scenarios. The assignment of impact severity in these scenarios was based on selecting the worst affected, between Industry and Power Generation.

Likelihood							
	5- Very likely	**8**					
	4 - Likely	**15**		**7,9,13**	**5**		
	3- Less likely			**11**	**6**	**3**	
	2- Unlikely	**16**	**14**		**4,10,12**		**1,2**
	1- Very unlikely						
		No impact	Light A	Average B	Significant C	Quite significant D	Severe E
		Impact					

Figure 1 - The RA risk matrix

It is evident from the risk matrix that four scenarios are placed in the high risk zone (red area) and four scenarios are placed in the medium risk zone (yellow area). The remaining 8 scenarios are in the low-risk zone.

Scenarios with the highest risk

The scenarios found to incorporate the highest risk (i.e. those placed in the yellow or red region, at or above the diagonal of the risk matrix) are listed in the table below.

Table 1 – Medium and high risk scenarios

Scen No	Name	Description
1	Sid0 kipi0	Total disruption of supply at the "Sidirokastro" and "Kipi" Entry Points due to restricted supply in the NG transmission system from Russia for one month.
2	Sid0 kipi0 tight LNG market	Scenario 1 assuming that the LNG market is tight with LNG cargoes hard to find and expensive.
3	Sid0 kipi0week	Total disruption of supply at the "Sidirokastro" and "Kipi" Entry Points due to restricted supply in the NG transmission system from Russia for seven (7) days during the week of maximum demand in winter.
5	Sid25 kipi50week	Restricted supply at the "Sidirokastro" and "Kipi" Entry Points equal to 25% and 50% of the technical capacity of the points during the week of maximum demand in winter.
6	Sid50 kipi50	Restricted supply at the Sidirokastro" and "Kipi" Entry Points equal to 50% and 50% of the technical capacity of the points, respectively, due to restricted supply in the NG transmission system from Russia, for 30 days
7	Sid50 kipi50week	Scenario 6 occuring during the week of maximum demand in winter.
9	Ship late 20 days	Delay in the arrival of LNG load for 20 days.
13	LNG25 week	Restricted supply at the "Agia Triada" Entry Point, equal to 25% of its technical capacity, because of a technical problem at the LNG facility, for seven (7) days during the week of maximum demand in winter.

In the following section we discuss the fulfilment of the Standards set out in Regulation 994/2010.

3. Fulfilment of the Standards

The current paragraph presents information on how the standards set out in the Regulation are met.

Supply standard

Suppliers serving protected customers should ensure the supply of natural gas to these customers in all cases and especially during the following situations stipulated in article 8 of Regulation 994/2010:

(a) in case of extreme temperatures during a 7-day peak period occurring with a statistical probability of once in 20 years;
(b) in case of any period of at least 30 days of exceptionally high gas demand, occurring with a statistical probability of once in 20 years; and
(c) in case of a period of at least 30 days in case of the disruption of the single largest gas infrastructure under average winter conditions.

Volumes required for meeting protected customer demand during a 7 day peak period and during a 30 days average winter period are derived from data provided in Tables A1 and A2 of the Appendix.

3.1.1 Compliance with the supply standard (a)

The 7 day peak period demand is based on the scenario used in the Risk Assessment. Protected customer demand peaks at 7.3 mcm/day. This value represents approximately 26% of technical and approximately 41% of the contracted entry capacity of the three IPs supplying gas to the NGTS.

3.1.2 Compliance with the supply standard (b)

Any period of at least 30 days of exceptionally high demand cannot exceed the peak and average figures of the 7 day peak period of the previous paragraph. The supply of protected customers in Greece is not based on a storage facility with usage-dependent sendout. Therefore compliance with the supply standard – case (a) justifies also the compliance with the supply standard – case (b).

3.1.3 Compliance with the supply standard (c)

The 30 day average winter period demand is based on the scenario used in the Risk Assessment. Protected customer demand averages at 5.2 mcm/day. The largest infrastructure in terms of capacity is the LNG terminal at Revithousa. In the unlikely event of an LNG terminal outage the remaining capacity at the other two IPs, sums to 15.1 mcm/day, or 290% of the average protected customer demand.
The total volumes required for the 30 day period sum up to 156 mcm and can be served through the existing long term supply contracts.

Infrastructure standard

3.1.4 Compliance with the N-1 standard

The strategies for fulfilling the N-1 standard involve measures for ensuring demand response potential and new infrastructure.

Given the very low level of maturity of these projects, it is very unlikely that any of them could be realized before 2016. We provide below an indication of the N-1

index. The N-1 Business As Usual (BAU) is the expected value in case no DSM measures are taken.

Table 2 – N-1 calculation after implementation of ST measures and the realization of a new entry point (estimated in 2020) (values in million Nm^3/day)

	Y2015	Y2020
Technical capacity at EP Sidirokastro	10.8	10.8
Technical capacity at EP Kipi	4.3	4.3
Technical capacity at EP Ag. Triada (LNG)	12.47	19.15
New EP	0	6
EPm	15.1	21.1
Im (LNG terminal)	12.47	19.15
Pm	-	
Sm	-	
Dmax	19.2	19.2
Deff	1.5	1.5
FS	3	3
N-1 BAU	79%	110%
N-1 + Deff	85%	119%
N-1 + Deff+ FS	103%	144%

The N-1 Index is also calculated (N-1+Deff) assuming demand response in the range of 1.5 mcm/day from large industrial consumers.

Finally the N-1 Index is also calculated (N-1+Deff+FS) while considering the fuel switching potential from gas fired powerplants with dual fuel capability. This potential currently exceeds 3 mcm/day. Fuel switching in the power sector is planned to take place during emergencies in the gas sector but within the day-ahead market provisions of the Electricity Grid Code.

Based on the above calculations it becomes evident that the N-1 standard can be effectively satisfied in the short term by ensuring the maximum availability of demand response (demand response from large customers and fuel switching in the power sector).

3.1.5 N-1 compliance at regional level

The N-1 calculations reported in the Plan are based on a calculation area set at National level. The Regulation provides the Competent Authorities with the possibility to extend the calculation area at regional level. This possibility will be examined in the next edition of the risk assessment, in cooperation with the other Competent Authorities in the Region, following the assessment of their preventive plans and the relevant calculations provided therein.

4. Strategies

In this section we provide an update of the following strategies adopted in the Preventive Action plan approved in 2013, and the measures adopted in the course of their implementation:

a) The short term strategy which aimed to address security of supply issues in the short term i.e. up to 2 years ahead (short term strategy).

b) The medium term strategy which aimed to provide increased security of supply in the medium term i.e. 3 to 6 years ahead (medium term strategy).

Implementation of the Short term strategy

The short term strategy of the 2013 Preventive Action Plan was composed of the following actions:

- Actions to reduce LNG delivery lead times during periods of high demand
- Agreements for supplementary gas
- Implementing market based DSM
- Implementing measures to enhance dual fuel availability

The first two actions require a very high involvement of market actors active in the upstream supply chain. Our analysis of options to design such mechanisms with a high TSO involvement either locally (FSRU, option contracts) or at a European level (European LNG exchange platform) was met with skepticism either due to the high costs associated or concerns on possible side effects on the functioning of markets. Thus it was concluded, at least until newer evidence surfaces, that the first two actions should fall under the responsibility of Market Actors whose core business is directly associated with the specific actions, namely the Suppliers.

The last two actions have been the subject of a long process involving consultations and discussions internally and with market stakeholders which paved the way to the legal basis for a rudimentary market based demand response scheme, as well as the scheme for compensating dual fuel availability provided by some CCGTs.

4.1.1 Implementing market based DSM

The implementation of market-based DSM is the second most effective measure that can be applied in the short term. An incentive scheme is under development for demand side response from Large Customers (primarily Industrial). The scheme is designed for demand response at the level of around 1.5 mcm, with compensation financed through a security of supply levy, just enacted, paid by all gas consumers. This is further elaborated in paragraph 4.1.3.

In contrast to initial planning, participation of power generating facilities to the DR scheme has been dropped, since new rules in the Power Market have permanently reduced by a large margin the operation profile of gas fired powerplants during off-peak hours, thereby dramatically reducing the potential for DR in the Power Sector during those hours.

DSM is expected to take place during supply crises through the following two schemes:

1. Large Industrial Interruptible customers self-commit **in advance of the crisis** to reduce their demand by at least 40% following the declaration of an "alert" crisis. In return they are rewarded with a significantly reduced charge of the security of supply levy.
2. Large Industrial non-Interruptible customers may choose **during the crisis** to reduce their demand in exchange for a payment for non-consumed gas. Suppliers are incentivised to make to offer attractive compensations to their customers since they are backed by TSO payments financed through the Security of Supply Levy.

The maximum annual budget for DSM is slated at 5.3 million €. It should be noted that there are no fixed costs foreseen for the second DSM scheme.

4.1.2 Enhancing dual fuel availability at CCGTs

The implementation of measures to enhance the availability of CCGTs with dual fuel capability aims to optimize the use of existing infrastructure, through regulatory intervention. The measures focus on:

- Electricity Grid Code provisions on powerplant maintenance schedule approval procedure in order to ensure adequate available capacity from powerplants with dual fuel capability during periods with high gas demand and ensuring compensation for operation with liquid fuel following instruction by the electricity TSO.
- Availability contracts between DESFA and CCGT operators with provisions on some or all of the following:
    - Compensation for liquid operation testing on a regular basis (quarterly).
    - Compensation for recovering liquid fuel train installation costs.
    - Compensation for costs associated with fuel stocks maintained on site.

The availability contracts aim to ensure the efficient recovery of costs stemming from a license obligation, which cannot be recovered from the market. The total annual budget for rewarding dual fuel capability at a capacity of 1.7 GWe is slated at 4.5 million € annually.

4.1.3 Cost recovery mechanism

On September 2014 a security of supply levy payable by all gas consumers was introduced according to the provisions of article 73 of Law 4001/2011. The levy is meant to finance the costs associated with the actions presented in paragraphs 4.1.1 & 4.1.2:

The SoS levy is set at a different level for each of one of the following four customer categories: a) interruptible customers, b) gas-fired power plants, c) protected customers, and, d) all other types of customers. The level of differentiation in the actual levy per customer category captures the different level of protection each customer category is offered according to the procedures foreseen in the national emergency plan.

The actual levy for each customer category as set by RAE Decision 344/2014 (Government Gazette B' 2536/9.2014) is shown in Table 3 ranging from a value of 0 €/MWh for interruptible customers to 0.48 x C €/MWh for protected customers.

Table 3 – Security of Supply Levy per customer category

Customer Category	SoS Levy (€ - 2014)
Interruptible	0
Gas fired power plants	0.16 x C
Protected customers	0.48 x C
All other customers	0.18 x C

The constant C may take a value ranging from zero (0) to one (1) and is set once a year by the Greek TSO, DESFA, according to a transparent ex-ante approved by RAE formula. The constant C is adjusted annually at the level necessary to pay off all predicted outflows from the Security of Supply account (managed by DESFA) during the year taking also into account the inflows to the account. The value of C has already been revised once and is currently set at 0.7224.

Implementation of the medium term strategy

The medium term strategy is based on the analysis presented in the 2012 Preventive Action Plan and comprised of options related to the development of new infrastructure. The aim was twofold: (a) to comply with the N-1 standard and (b) to reduce the residual risk primarily posed by scenarios 5 and 2 at the lowest cost for gas consumers.

Analysis showed that in order to eliminate all appreciable risks the medium term strategy should include:

1. The upgrade of the Revithoussa LNG terminal and
2. A new entry point which could be either a new Interconnector to Liquid Markets, an LNG Terminal or a UGS.

The first facet of the medium term strategy is being implemented with ongoing works at the Revithoussa Facility. The project is expected to be completed by the end of 2016.

The second item in in the medium term strategy is more complex and expensive as it requires the construction of a new energy infrastructure that will constitute a new entry point to the Greek Natural Gas System. The completion of any of the several PCI projects that are situated in Greece (i.e., TAP, IGB, the Aegean LNG Terminal, the Alexandroupolis LNG terminal and/or the Kavala UGS) will result into the creation of a new entry point to the Greek Natural Gas System and therefore diminish any residual risk for supply disruption to gas consumers.

Obligations on System Users

Since the 2012 Preventive Action Plan was adopted, a security of supply levy was introduced to the market, payable by all gas consumers as mentioned in paragraph 4.1.3.

The requirements for expanding Obligations on market participants presented in the 2012 Preventive Action Plan are considered partially valid and are presented below, with the necessary updates.

4.1.4 Obligations imposed on Suppliers

Articles 48 and 81 of Law 4001/2011 have been amended in order to clearly provide for the obligation of gas suppliers to guarantee uninterrupted supply to Protected Customers, as provided for in the Regulation. With the upcoming revision of the Natural Gas Licensing Regulation, to be completed by Q1 of 2016, the specific terms to materialize this obligation will be included in the standard supply license terms.

4.1.5 Options for new Obligations on Suppliers and Large Consumers

The analysis in Section 4 of the 2012 Preventive Action Plan indicated that DSM and supplementary gas can play a vital role during emergencies. Consequently they were part of the proposed short term strategy. Possible new obligations imposed on Suppliers and large consumers/power generators in order to activate market based DSM and to enhance LNG availability during a crisis are presented below:

1. Obligation on Suppliers to offer interruption contracts to all customers who are not protected customers. The contracts should be offered on a voluntary basis and provide for load shedding through the market based mechanism described in 4.1.1.
2. Obligation on Suppliers to differentiate sources or to maintain a minimum stock of gas to ensure :
    i. Demand of served protected customers.
    ii. Demand required during safe shutdown of critical Industrial Installations.
    iii. Served CCGT capacity with no dual fuel capability.
3. Obligation on Power Generators with gas fired CCGTs with no dual fuel capability, to comply with obligation no 2 above, either directly or through their supplier.

Obligations 2 & 3 could effectively be put in place after the involved licensees obtain access to storage facilities. This is more likely to take place in the medium term rather than in the short term.

4.1.6 Obligations on Owners and Operators of Independent Gas Systems

As presented in the previous sections, new infrastructure required for complying with the supply standard of the Regulation may be developed by third parties (i.e. other than the TSO of the National Natural Gas System, DESFA S.A.).

Therefore, it is necessary that the license terms of the owners and operators of Independent Gas Systems include the obligation:

1. To operate their infrastructure in a way that enables the fulfilment of the supply standard imposed on gas suppliers according to the Regulation.

2. To cooperate with DESFA SA in the event of an emergency, according to the provisions of the emergency action plan.

4.1.7 Obligations on Gas Distribution Companies

Gas distribution companies are serving through their networks all the protected customers and, therefore, play a vital role in the uninterruptible supply of Protected Customers. All current and future Gas Distribution Companies will be required to align their internal emergency plans with the national emergency action plan, within 6 months from its adoption date, and also to cooperate with the DESFA in the event of an emergency according to the provisions of the emergency action plan and their license terms.

Obligation exceptions

Article 8 of the SoS Regulation requires that RAE identify in the preventive action plan how any increased supply standard or additional obligation imposed on System Users may be temporarily reduced in the event of a Union or regional emergency.

In the Risk assessment we identified two supply standards complementing the supply standard of article 8.

1. Capacity adequacy in the Power Generation System during gas emergencies, taking into account energy switching potential in Power Generation.
2. Security of industrial facilities: The aim is to try to ensure the supply during the first 48 hours of any crisis to the Industry in order to allow for a safe shutdown of their installations.

The above supply standards are related to essential security requirements and therefore cannot be reduced in the event of a Union or regional emergency.

Potential impact of measures adopted on neighbouring MS

The selected strategies are composed of actions that focus on demand side management, and supplementary gas and infrastructure development. Therefore they are not expected to have any negative impact on neighbouring MS.

Physical reverse flow at the interconnection with Bulgaria

According to the provisions of paragraph 5 of Article 6 of Regulation 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply, the transmission system operators shall enable permanent bi-directional capacity on all cross-border interconnections between Member States as soon as possible and no later than December 3, 2013.

In this context the Greek and Bulgarian TSOs submitted to RAE in its role as the Competent Authority for security of gas supply, and the Bulgarian Competent Authority a joint proposal for enabling physical reverse flow capacity at the interconnection between the two countries (interconnection point Kula-Sidirokastro) according to the procedure set in Article 7 of the Regulation.

RAE with decision no. 452/2013 has accepted the joint proposal of the Greek and Bulgarian TSOs. According to the proposal, physical reverse flow capacity will be offered to the market on a firm basis, as long as no crisis has been declared in the transmission systems of Greece and Bulgaria, up to the level of one (1) million Nm3

NG daily, and on an interruptible basis up to three (3) million Nm3 NG daily. The cost of the investment related to the activation of physical reverse flow capacity of the Greek NGTS was estimated at € 1 million. The results of the market test held by the TSOs during the formulation of their joint proposal indicated strong interest from market participants, hence it is expected that the associated investment costs should be recovered through the anticipated capacity bookings in that connection point.

The announcement of the physical reverse flow capability to the level proposed by the TSOs is by no means a panacea. As we reported during the Stress Tests in August 2014, physical reverse flow capability from Greece to Bulgaria during emergencies, attributed to interruption of supply via the Ukrainian route, is very constrained due to the fact that the NNGTS will most likely be operating under N-2 conditions (such interruptions affect both Northern Entry Points, i.e. 'Sidirokastron' and 'Kipi') with barely sufficient entry capacity to satisfy all the contracted volumes at average winter conditions.

It should be noted however that the above constraints will relax significantly after 2017, following the gradual completion of the projects belonging to the medium term strategy.

References

1. Regulation (EU) No 994/2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC
2. Assessment of Risk associated with the Security of Gas Supply in Greece, RAE December 2011
3. JRC Institute for Energy and Transport “Preventive Action Plan and Emergency Plan Good Practices”
4. Preventive Action Plan 2013 (RAE Decision 141/2013)

5. Appendix – Demand data

Table 4 Demand during a 7-day peak demand period

		Protected Customers	*Industrial Customers*	*Power Generation*
Day	**1**	6,618,633Nm³	2,292,885Nm³	5,227,094Nm³
Day	**2**	7,340,981Nm³	2,186,904Nm³	5,526,864Nm³
Day	**3**	6,966,585Nm³	2,053,839Nm³	7,123,549Nm³
Day	**4**	5,933,755Nm³	2,336,886Nm³	7,350,502Nm³
Day	**5**	5,251,652Nm³	2,431,385Nm³	6,300,851Nm³
Day	**6**	5,890,867Nm³	2,421,424Nm³	7,455,904Nm³
Day	**7**	6,069,609Nm³	2,345,781Nm³	7,050,557Nm³

Table 5 Demand during a 30-day period

		Protected Customers	*Βιομηχανικοί*	*ΗΠ*
Day	**1**	4,922,564.46	2,268,102.61	7,029,488.26
Day	**2**	3,139,399.96	2,430,772.70	6,606,280.07
Day	**3**	3,166,507.69	2,847,437.65	6,856,036.65
Day	**4**	3,414,475.64	2,941,556.31	6,427,988.81
Day	**5**	3,394,839.38	2,894,689.05	6,614,056.73
Day	**6**	4,200,204.24	2,715,500.86	6,800,961.54
Day	**7**	4,917,801.93	2,402,180.03	6,543,439.17
Day	**8**	5,084,118.00	2,164,503.38	6,820,175.13
Day	**9**	4,630,976.26	2,270,522.47	6,475,988.08
Day	**10**	4,065,696.73	2,564,993.63	7,028,867.26
Day	**11**	4,490,931.42	2,455,161.93	6,444,519.63
Day	**12**	5,121,751.06	2,495,601.42	5,564,902.36
Day	**13**	5,630,671.94	2,459,588.78	3,441,443.63
Day	**14**	5,759,936.59	2,499,509.87	3,824,882.22
Day	**15**	5,990,576.43	2,257,462.15	5,126,394.06
Day	**16**	5,189,274.63	2,239,752.18	5,838,518.49
Day	**17**	4,445,981.19	2,429,705.01	5,928,162.64
Day	**18**	4,542,851.47	2,415,126.96	6,428,329.65
Day	**19**	4,910,495.60	2,411,980.81	5,731,605.84
Day	**20**	5,475,725.61	2,408,953.48	5,827,506.69
Day	**21**	6,618,633.23	2,292,885.05	5,227,094.41
Day	**22**	7,340,980.87	2,186,904.29	5,526,864.17
Day	**23**	6,966,585.01	2,053,838.55	7,123,548.68
Day	**24**	5,933,754.63	2,336,885.65	7,350,502.02
Day	**25**	5,251,651.97	2,431,385.43	6,300,851.38
Day	**26**	5,890,866.77	2,421,424.49	7,455,904.24
Day	**27**	6,069,609.12	2,345,781.02	7,050,557.43
Day	**28**	6,236,311.68	2,336,758.26	3,637,799.73
Day	**29**	6,971,770.19	1,977,146.31	4,537,979.03
Day	**30**	6,484,512.76	2,086,308.64	4,423,892.30