Central Networks

A company of E.ON

Regulatory report for DG Incentives, RPZs & IFI

Reporting year 2004/5 (1/2 yr)

By Central Networks

Contents

1. Introduction 3

1.1. Context 3

1.2. IFI 3

1.3. RPZ 3

2. Central Networks East 5

3. Central Networks West 12

4. Summary of IFI projects 19

5. Appendix 1 20

1. Introduction

This report contains the reports for the two licensed areas of Central Networks East and Central Networks West.

Central Networks is committed to Research and Development (R&D) initiatives that will provide benefits to our customers, the electricity industry and shareholders. Our approach to R&D is to identify emerging technologies and opportunities that could increase the efficiency of our operations, enhance overall safety and provide a reliable network that delivers a high quality of supply.

1.1. Context

As part of the Distribution Price Control Review (DPCR), Ofgem has introduced the Innovation Funding Incentive (IFI) and Registered Power Zone (RPZ) incentive mechanisms. They were consulted on as an integral part of the DPCR proposals and were widely supported by a large majority of consultees. As part of this development process Ofgem published a Regulatory Impact Assessment 22 setting out the case for the introduction of the IFI and RPZs.

The primary aim of these two new incentives is to encourage the Distribution Network Operators (DNOs) to apply innovation in the way they pursue the technical development of their networks. Ofgem recognised that innovation has a different risk/reward balance compared with a DNO's core business. The incentives provided by the IFI and RPZ mechanisms are designed to create a risk/reward balance that is consistent with research, development and innovation.

The two main business drivers for providing these incentives at this time are the growing need to efficiently manage the renewal of network assets and to provide connections for an increasing capacity of distributed generation at all distribution voltage levels. These are significant challenges that will both benefit from innovation.

1.2. IFI

The IFI is intended to provide funding for projects focused on the technical development of distribution networks, up to and including 132kV, to deliver value (i.e. financial, supply quality, environmental, safety) to end consumers. IFI projects can embrace any aspect of the distribution system asset management from design through to construction, commissioning, operation, maintenance and decommissioning. The detail of the IFI mechanism is set out in the Special Licence Condition C3, Standard Licence Condition 51 and the DG Regulatory Instructions and Guidance (RIG). They can be summarised as follows*:*

> A DNO is allowed to spend up to 0.5% of its Combined Distribution Network Revenue on eligible IFI projects. The DNO is allowed to recover from customers a significant proportion of its IFI expenditure. This proportion is set at 90% in 2005/6 reducing in equal steps to 70% in 2009/10.
>
> Ofgem will not approve IFI projects but DNOs will have to openly report their IFI activities on an annual basis. These reports will be published on the Ofgem website. Ofgem reserves the right to audit IFI activities if this is judged to be necessary in the interests of customers.

1.3. RPZ

In contrast to the IFI, RPZs are focused specifically on the connection of generation to distribution systems. The estimates made by DNOs as part of the DPCR process indicated that some 10GW of generation could be connected in the next five years. This generation could connect at every distribution voltage level bringing new system design and operating challenges.

RPZs are therefore intended to encourage DNOs to develop and demonstrate new, more cost effective ways of connecting and operating generation that will deliver specific benefits to new distributed generators and broader benefits to consumers generally. The detail of the RPZ mechanism is set out in the Special Licence Condition D2, Standard Licence Condition 51 and the DG Regulatory Instructions and Guidance (RIG).

The RPZ mechanism is an extension of the Distributed Generation (DG) Incentive that is also being introduced as part of DPCR4. The DG Incentive allows DNOs to recover their generation connection costs by a combination of pass through (80%) and incentive per kW connected (£1.5/kW). This approach is expected to deliver a higher return to a DNO for generation connection schemes than other network investments.

If a DNO employs genuine innovation in the way that it connects generation it can seek to register the connection scheme with Ofgem as an RPZ. Ofgem will decide, using published criteria, whether the scheme qualifies as an RPZ. If it does, the incentive element of the DG Incentive is increased for the first five years of operation by £3/kW.

2. Central Networks East

End of year report for DG Incentives, RPZs & IFI

Regulatory report for DG Incentives, RPZs & IFI

Reporting year 2004/5 (1/2 yr)

Central Networks East

Distributed Generation (DG) Incentive

Total Incentivised DG Capacity (MW)	
Total capex for DG (£m)	
Use Of System capex for DG (£m)	
shared connection capex for DG (£m)	
assets transferred out of DG capex to demand capex (£m)	
DG network unavailability (MWh)	
DG Network unavailability rebate payment (£m)	
operational & maintenance costs for DG (£m)	

Innovation Funding Incentive

IFI carry forward (£m)	0
eligible IFI expenditure (£m)	0.046636
eligible IFI internal expenditure (£m)	0.01095
Combined network revenue (£m)	258.53

Registered Power Zones (RPZs)

RPZ name	
RPZ DG capacity (MW)	
RPZ starting year	

Individual IFI Project report: – October 2004 – March 2005

Central Networks East

Description of project	EA Technology – Overhead Line Module 2 and Forum. Research and development into all aspects of Distribution overhead lines.				
Expenditure for financial year	Internal - £ 1,400 External - £10,418 Total Cost - £11,818		Expenditure in previous financial years	Total Cost £23,636	
Technological area and / or issue addressed by project	Aspects of overhead line design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved	10 Years (average)	
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£88k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks East

Description of project	EA Technology – Cable Module 3 and Forum. Research and development into all aspects of Distribution Cables.				
Technological area and / or issue addressed by project	Aspects of cable design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved	10 Years (average)	
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£88k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks East

Description of project	EA Technology – Plant Module 4 and Forums. Research and development into all aspects of Distribution Cables.				
Expenditure for financial year	Internal - £ 3,600 External - £9,550 Total Cost - £13,150		Expenditure in previous financial years	Total Cost £26,300	
Technological area and / or issue addressed by project	Aspects of Plant inc Protection, design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved	10 Years (average)	
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£87k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks East

Description of project	EA Technology – Generation Module 5 and Forums. Research and development into all aspects of Distribution Cables.				
Expenditure for financial year	Internal - £ 1,100 External - £8,750 Total Cost - £9,850		Expenditure in previous financial years		Total Cost £19,700
Technological area and / or issue addressed by project	Aspects of Embedded Generation, impacting network design, specification and operation. Individual projects in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including new connection, network construction, maintenance and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved		10 Years (average)
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£47k	PV of Project Benefits	£136k	NPV of Project Costs	£89k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report – Central Networks East

Description of project	Reference Network Development		
Expenditure for financial year	Internal - £1,725 External - £7,500 Total - £9,225	Expenditure in previous financial years	N/A
Technological area and / or issue addressed by project	The purpose of this project is to build on previous research work to develop a practical software tool that: • Creates optimum circuit disaggregation groups to allow analysis of relative network performance by reference to the parameters that define each of the groups and the populations of each group both within and between DNO networks, and • Accurately predicts the effects of different investment options on each of the disaggregation groups to allow cost / benefit evaluation of different strategies to be undertaken. The Partners in this project are: Scottish Power, United Utilities, Central Networks and PB Power.		
Type(s) of innovation involved	Incremental		
Expected Benefits of Project	• The identification of potential improvement strategies by highlighting the drivers of network performance by using both intra-company and inter-company comparisons. • The identification of optimum improvement strategies that include fundamental changes to circuit topology as well as incremental improvements to reliability or fault restoration. In addition to the quantified financial benefits, the, less tangible, benefits of greater understanding of network performance drivers, and the possibility of an improved regulation have the potential to be extremely large.		
Expected Timescale to adoption	2 years	Duration of benefit once achieved	3 years
Estimated Success probability (at start of project)	75%		

PV of Project Costs	£40,202	PV of Project Benefits	£100,465	NPV of Project Costs	£60,263
Commentary on project progress and potential for achieving expected benefits					

3. Central Networks West

End of year report for DG Incentives, RPZs & IFI

Regulatory report for DG Incentives, RPZs & IFI

Reporting year 2004/5 (1/2 yr)

Central Networks West

Distributed Generation (DG) Incentive

Total Incentivised DG Capacity (MW)	
Total capex for DG (£m)	
Use Of System capex for DG (£m)	
shared connection capex for DG (£m)	
assets transferred out of DG capex to demand capex (£m)	
DG network unavailability (MWh)	
DG Network unavailability rebate payment (£m)	
operational & maintenance costs for DG (£m)	

Innovation Funding Incentive

IFI carry forward (£m)	0
eligible IFI expenditure (£m)	0.046636
eligible IFI internal expenditure (£m)	0.01095
Combined network revenue (£m)	255.96

Registered Power Zones (RPZs)

RPZ name	
RPZ DG capacity (MW)	
RPZ starting year	

Individual IFI Project report: – October 2004 – March 2005
Central Networks West

Description of project	EA Technology – Overhead Line Module 2 and Forum. Research and development into all aspects of Distribution overhead lines.				
Expenditure for financial year	Internal - £ 1,400 External - £10,418 Total Cost - £11,818		Expenditure in previous financial years		Total Cost £23,636
Technological area and / or issue addressed by project	Aspects of overhead line design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved		10 Years (average)
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£88k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks West

Description of project	EA Technology – Cable Module 3 and Forum. Research and development into all aspects of Distribution Cables.				
Expenditure for financial year	Internal - £ 1,400 External - £10,418 Total Cost - £11,818		Expenditure in previous financial years		Total Cost £23,636
Technological area and / or issue addressed by project	Aspects of cable design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved		10 Years (average)
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£88k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks West

Description of project	EA Technology – Plant Module 4 and Forums. Research and development into all aspects of Distribution Cables.				
Expenditure for financial year	Internal - £ 3,600 External - £9,550 Total Cost - £13,150		Expenditure in previous financial years		Total Cost £26,300
Technological area and / or issue addressed by project	Aspects of Plant inc Protection, design, specification and rating. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including construction, maintenance, refurbishment and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved		10 Years (average)
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£49k	PV of Project Benefits	£136k	NPV of Project Costs	£87k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report: – October 2004 – March 2005
Central Networks West

Description of project	EA Technology – Generation Module 5 and Forums. Research and development into all aspects of Distribution Cables.				
Expenditure for financial year	Internal - £ 1,100 External - £8,750 Total Cost - £9,850		Expenditure in previous financial years	Total Cost £19,700	
Technological area and / or issue addressed by project	Aspects of Embedded Generation, impacting network design, specification and operation. Individual projects listed in **Appendix 1.**				
Type(s) of innovation involved	All innovation types involved (incremental, significant, technological substitution and radical).				
Expected Benefits of Project	Financial project benefits are expected to be approximately 6 times the cost of successful projects. The benefits will be across a range of areas including new connection, network construction, maintenance and operation.				
Expected Timescale to adoption	3 years (average)		Duration of benefit once achieved	10 Years (average)	
Estimated Success probability (at start of project)	25% of the whole programme of projects.				
PV of Project Costs	£47k	PV of Project Benefits	£136k	NPV of Project Costs	£89k
Commentary on project progress and potential for achieving expected benefits	Projects currently on target.				

Individual IFI Project report – Central Networks West

Description of project	Reference Network Development		
Expenditure for financial year	Internal - £1,725 External - £7,500 Total - £9,225	Expenditure in previous financial years	N/A
Technological area and / or issue addressed by project	The purpose of this project is to build on previous research work to develop a practical software tool that:- • Creates optimum circuit disaggregation groups to allow analysis of relative network performance by reference to the parameters that define each of the groups and the populations of each group both within and between DNO networks. • Accurately predicts the effects of different investment options on each of the disaggregation groups to allow cost / benefit evaluation of different strategies to be undertaken. The Partners in this project are: Scottish Power, United Utilities, Central Networks and PB Power.		
Type(s) of innovation involved	Incremental		
Expected Benefits of Project	• The identification of potential improvement strategies by highlighting the drivers of network performance by using both intra-company and inter-company comparisons. • The identification of optimum improvement strategies that include fundamental changes to circuit topology as well as incremental improvements to reliability or fault restoration. In addition to the quantified financial benefits, the, less tangible, benefits of greater understanding of network performance drivers, and the possibility of an improved regulation have the potential to be extremely large.		
Expected Timescale to adoption	2 years	Duration of benefit once achieved	3 years
Estimated Success probability (at start of project)	75%		

PV of Project Costs	£40,202	PV of Project Benefits	£152,700	NPV of Project Costs	£112,498
Commentary on project progress and potential for achieving expected benefits					

4. Summary of IFI projects

Innovation Funding Incentive	East	West	Total
IFI carry forward (£m)	0	0	**0**
eligible IFI expenditure (£m)	0.046636	0.046636	**0.093272**
eligible IFI internal expenditure (£m)	0.01095	0.01095	**0.02190**
Combined network revenue (£m)	258.53	255.96	**514.49**

5. Appendix 1

LIST OF EATL STP PROJECTS 2004-2005

MODULE 2 – OVERHEAD NETWORKS

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S2114_2	Lightning risk contour map - Stage 2: Prototype risk map	A map showing how the risk from lightning damage varies from place to place will help companies target lightning protection measures to reduce operational expenditure.	May 2004	Oct 2004	£11,200	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2118	Module co-ordination	Administration	Apr 2004	Mar 2004	£18,800	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2119	Effect of lightning on insulated earth wires.	There will be quantifiable benefits in network performance as well as improvement in operator health and safety through re-evaluation of cable design based on this study of lightning effects.	Aug 2004	Feb 2005	£12,100	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2120	Detection of defective surge arresters	Network performance will be improved by reducing over-voltage transients to customers, reducing equipment failure due to over-voltage stress, identification of under performing network protection and early detection of incipient faults in surge arresters.	May 2004	Oct 2004	£16,325	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S2121	Tracking tests on new and old covered conductor samples from Finland and Sweden	Covered conductor networks will experience improved performance, particularly in coastal or polluted areas, through the re-specification of these conductors.	Apr 2004	Oct 2004	£23,780	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2122	Arc gaps for long-rod polymeric 132kV insulators on wood pole and tower lines - Stage 1: Arc Gaps and Grading rings – Use of existing data	Improved network performance and operational cost reduction will stem from this best practice definition of long rod insulator specification.	Jul 2004	Feb 2005	£11,580	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2123	Continued involvement with Cigre WG11	By determining and distributing best practice across the industry through cost effective identification of world-wide best practice, all aspects of customer benefits should be positively impacted.	May 2004	Apr 2005	£17,070	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2124	Vibration tests on new covered conductor types	Premature replacement of new conductor types should be reduced and conversely in service failure of these conductors should be reduced, resulting in operational cost reduction and improved network performance.	Apr 2004	Oct 2004	£11,575	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S2125	Monitoring Cigré 2004/5	By determining and distributing best practice across the industry through cost effective identification of world-wide best practice, all aspects of customer benefits should be positively impacted.	Aug 2004	Apr 2005	£9,250	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2126	Long-term monitoring of conductor temperature at fixed current to confirm/reassess validity of using Leatherhead 1976 data as basis of distribution ratings	Up-rating of distribution network conductors could substantially reduce the cost of replacing these items by deferring temporarily or permanently the need for replacement.	Apr 2004	May 2005	£27,300	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2127	Attend 2nd Wrap seminar and report	Positive environmental benefits will stem from the improvement in disposal practices of treated utility poles.	Apr 2004	May 2005	£1,360	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF
S2112	Call-out for leakage currents on suspect poles – 10% additional funding		Nov 2003	Sep 2004	£980	Mod 2 DNOs: CN, UU, SP, WPD, S&S, EDF

MODULE 3 – CABLE NETWORKS

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S0352	Module 3 administration	Provide an efficient administration for the module, including the following services as set out in the STP agreement:- ❑ Provide support to the steering group ❑ Prepare proposals for new projects against the objectives set by the steering group ❑ Ensure as far as reasonably possible that projects are delivered to the required time, budget, and quality standards ❑ Ensure accurate and timely communication with the participants ❑ Make recommendations for protection or exploitation of the IPR arising from the Module Programme and Outputs	Apr 2004	Mar 2005	£13,000	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S3100_2	Specification for link boxes. Stage 2: Final specification	Through correct specification of link box characteristics, to increase reliability and thereby reduce operating costs.	Apr 2004	Oct 2004	£8,000	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD
S3113	Current rating tools for cables	Through the development of user friendly software for the calculation of cable ratings, to ensure best engineering design practice and to reduce the cost of purchase of cables by more accurately matching cable specification to functional requirement. Stage 1: Extend the functionality of the existing CRATER cable rating software to include user defined input of load curve. Stage 2: Create a tool to calculate ratings of cables in banks of ducts.	Apr 2004	Nov 2004	£38,000	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S3115	Corrosion resistance of aluminium foil cables	To improve reliability and to reduce operating costs by reducing life-reducing corrosion in 132 kV foil laminate cables.	May 2004	Jan 2005	£21,000	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD
S3116	Mechanical properties of corrugated ducting	To introduce best engineering practice and to reduce operating costs by better understanding and hence correct selection of cable duct.	Apr 2004	Dec 2004	£20,000	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD
S3120	Burn-back of cables in ducts, basements and ducts	To improve network performance, to reduce the impact of cable failure and to reduce health and safety risks from serious fires, by testing coating systems which can prevent the propagation of fire along PE sheathed cable.	Apr 2004	Dec 2004	£26,670	Mod 3 DNOs: EDF, CN, CE, S&S, UU, WPD

MODULE 4 – SUBSTATIONS

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S0425	Module Co-ordination 04/05	To provide support to the steering group and its sub-groups to enable them to function as efficiently as possible.	Apr 2004	Mar 2005	£21,630	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S0499_3	Extension of TASA Trial	To improve network performance as a result of reduced failure of on-load tap changers by ensuring that the TASA Technique is rigorously tested to give confidence in its approach and methodology to enable a condition based maintenance strategy to be implemented for on load tap changers.	May 2004	May 2005	£35,920	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4127_7	Scoping Study: Identify relevant Electro-technical forums to monitor	To further Module 4's understanding of other, mainly European, organisations activities in line with Objective 5 of STP's Substation Module core scope and objectives.	May 2004	Jun 2004	£1,000	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4127_8	Scoping Study: Seminar to discuss S0485 Safety	To reach a consensus opinion amongst member companies regarding the safety implications for the design and operation of substation plant in the UK in light of the on-going "Europeanisation" of substation plant design.	Jul 2004	Jul 2004	£1,000	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S4130_2	Dry Wipe Assessment	To rank the performance of wipe products depending on their suitability for cleaning the tanks of HV oil filled equipment during maintenance.	Apr 2004	Aug 2004	£11,200	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4145	Environmental Aspects of Substation Operation	To present a summary of worldwide techniques and solutions currently employed to reduce the environmental impact of existing and planned substations.	Apr 2004	Aug 2004	£7,100	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4146	Impact of Distributed Generation	To present a high level perspective of the fundamental issues and implications of connecting Distributed Generation to the distribution network focused at the 11kV level and take into account those factors, issues and implications for substation plant.	Jun 2004	Aug 2004	£13,000	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4147	On-line oil regeneration	To review available online oil regeneration processes for oil filled equipment in the context of reducing cost of maintenance, thereby improving network performance through increased reliability and extending life.	Jun 2004	Dec 2004	£22,500	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S4149	Reliability of existing and newly installed plant	To provide an objective assessment of the extent and severity of the issues regarding the performance of newly installed plant which in some instances is not performing as well as older, more established plant.	Jun 2004	Dec 2004	£21,500	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4150	Arc Suppression Coil Systems	To produce a concise report which clearly reviews the recent development in ASCS and the issues that need to be considered when applying this technology to UK distribution networks rated up to 36kV.	May 2004	Jun 2004	£7,680	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4155	Investigation of Ester Based Insulating Oils	To understand where and when vegetable based oils would be more advantageous than mineral based oils and where on the system would most advantage be gained from its use.	Jul 2004	Sep 2004	£13,289	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD
S4156	Current Cigre Substation Work Group	To provide up-to-date information on work applicable to the UK DNO's from world-wide sources.	May 2004	Aug 2004	£10,790	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S4157	Review of last 10 years of Cigre Substation work	To provide a source of new ideas for UK use as well as providing information on world-wide progress and experience of substations.	May 2004	Aug 2004	£11,620	Mod 4 DNOs: CN, CE, UU, S&S, SP, EDF, WPD

MODULE 5 – DISTRIBUTED GENERATION

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S0581_4	Voltage control policy assessment tool	Developing effective policies for applying voltage control technologies is key in enabling distributed generation Developers and Customers to connect increasing numbers of small generators. This project is developing a tool for DNOs to assess new approaches and find the best that allows maximum connections at lowest cost to developer, customer & DNO.	Apr 2004	May 2004	£7,500	Mod 5 DNOs: CN, EDF, CE, SP, UU
S0581_5	Voltage control policy assessment tool (workshop)	See previous for project objective. This workshop tested whether the tool functioned as required and gave DNO staff the opportunity to gain knowledge of how to use it.	Jun 2004	Jul 2004	£5,635	Mod 5 DNOs: CN, EDF, CE, SP, UU
S0594_3	Rapid response to regulatory consultation documents	To ensure that knowledge gained from STP projects is effectively provided into the consultation processes. Thereby ensuring that the impact of regulatory developments on innovative technology solutions in development is known and can be accounted for to the long term benefit of network customers.	Apr 2004	Mar 2005	£11,500	Mod 5 DNOs: CN, EDF, CE, SP, UU

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S5100_2	Enhancing protection & control systems to maximise network benefits …	Future network performance will be enhanced by defining best practice management of protection and control systems, as will the ability to manage the risks associated with DG connection.	Mar 2004	May 2004	£9,900	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5102	A watching brief on distributed generation	This project assembles the key information published in UK & internationally to ensure that all the projects in STP use best knowledge and do not duplicate work. It benefits DNOs, DG Developers & customers in bringing to their notice best practice.	Apr 2004	Jan 2005	£12,500	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5113	Seminar on Module 5 work – Stability	Knowledge & understanding of stability issues as the amount of DG in distribution networks increases is an increasing concern. This seminar will transfer knowledge from 8 STP projects to DNO design engineers, thereby enabling them to better accommodate connection requests without incurring Supply Quality dis-benefits.	Jun 2004	Sep 2004	£7,100	Mod 5 DNOs: CN, EDF, CE, SP, UU

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S5119	Stability assessment policies: generic guidance	A best practice guide for stability assessment policy will communicate the output from previous STP projects on stability and will assist in enhancing network performance and reduce operational costs stemming from instability caused by DG connection.	Mar 2004	Apr 2004	£5,000	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5122_2	Guidance as to LOM protection settings on distribution networks	Having the right setting on generator Loss of Mains protection is vital to ensure customers see the minimum number of loss of supply events. This project gives advice founded upon earlier stage testing of commonly used relays in the UK. Major reductions in numbers of nuisance false trips are expected.	Jun 2004	Aug 2004	£5,800	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5123_2	BAM Solution 3.5 - Line voltage regulation	To improve future network performance by developing a guide through improved operational design practices, to communicate effectively innovative options for line voltage regulation.	Jun 2004	Aug 2004	£9,250	Mod 5 DNOs: CN, EDF, CE, SP, UU

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S5124_2 & 3	BAM Solution 2.2 - Increase impedance of components S2	To assess the potential for increasing the impedance of transformers by identifying and enumerating the network benefits and disadvantages. To identify methods to reduce the disadvantages. To design and cost demonstration trials.	Apr 2004 Jul 2004	Jun 2004 Sep 2004	£8,000 £9,800	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5125	BAM Solution 2.1 - Uprate network components	To investigate the engineering, practical and fiscal considerations and constraints associated with the options of holding the 11kV fault level at the design fault level of 250MVA during normal running arrangements and increasing the design fault level. The investigation will consider implications to HV and LV connected customers as well as implications to the DNO system.	May 2004	Jul 2004	£7,500	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5126	BAM Solution 2.3 - Converter technology	To obtain outline costs and high-level technical benefits for commercially available converters across a range of generator types. Aim being to assist the process of implementation of TSG Workstream 3 solution 3.5 by DNOs.	Apr 2004	Jun 2004	£5,000	Mod 5 DNOs: CN, EDF, CE, SP, UU

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S5128	Module 5 co-ordination	Administration	Apr 2004	Mar 2005	£15,000	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5130	Network risk management	To assist DNOs to form a set of views on issues surrounding network risk including those associated with increasing network utilisation and risks of relying on DG to avoid network reinforcement, ideally, before the draft P2/6 network security standard is published for consultation.	Jun 2004	Sep 2004	£13,500	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5132	Overview of system behaviour with large amounts of windpower	To assist in ensuring supply quality in disturbances on networks with large amounts of windpower, the key aspects of this recent work in Denmark are to be identified for application in UK.	Jun 2004	Jul 2004	£3,000	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5133	Tapchangers - reverse power capabilities	Tap changers are key items in achieving good voltage control with significant amounts of distributed generation. There is no definitive reference document of the equipment out on the networks reverse power capability. The project will give this, enabling the most cost-effective option to be selected.	Jun 2004	Sep 2004	£15,000	Mod 5 DNOs: CN, EDF, CE, SP, UU

Project No	Project Title	Project Objective	Commitment Date	Completion Date	Budget	Partners
S5138	Review of Industry Codes	To identify likely new Distribution Code provisions relating to distributed generation and comment on their implications.	Jun 2004	Jul 2004	£7,250	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5139	Potential of RPZ framework	To improve future network performance and reduce network costs by defining specific RPZ scenarios and quantifying the commercial issues, in order to facilitate the identification and establishment of optimum RPZs.	Aug 2004	Sep 2004	£4,200	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5140	Domestic CHP potential	To produce an up to date estimate of rollout for key dCHP products to establish a time plan against which DNOs may have to respond with technical solutions to the supply quality and financial implications.	Jul 2004	Sep 2004	£7,000	Mod 5 DNOs: CN, EDF, CE, SP, UU
S5141	IFI work portfolio	To identify potential project outlines that meet the IFI benefit criteria for customers, generators and DNOs through a brain storm and project formulation workshop.	Jun 2004	Jul 2004	£2,500	Mod 5 DNOs: CN, EDF, CE, SP, UU