d. actual or expected cost of acquiring local-into-local programming, if offered, disaggregated to reflect fixed and variable costs separately;

Attached as Schedule VIII(d) is a chart showing the total cost of acquiring local-into-local programming for each of the past three years and for 2002. Local-into-local programming was not initiated until late 1999, and as such there is no cost data for 1998. DIRECTV has not forecast the expected cost of acquiring local-into-local programming for 2003 and as such, the data for 2003 is unavailable.

Where reasonable, costs are identified at the DMA level, with other costs reflected in the aggregate costs across all DMAs. Costs are also identified for the DIRECTV 4S spot beam satellite, the primary purpose of which is to provide local programming services.

e. actual or expected costs of acquiring other programming, disaggregated to reflect fixed and variable costs separately;

Attached as Schedule VIII(e) is a chart showing the actual and expected costs of acquiring programming per year for 2000 through 2001, and a forecast of programming costs by tier for the years 2002 and 2003. DIRECTV considers programming acquisition costs to be entirely variable; therefore, the costs are not disaggregated. As explained further below, this information is unavailable by DMA and by state.

Schedules VIII(e) include all significant residential programming packages available for sale during the time period 2000 through 2001, but exclude packages sold to commercial subscribers, which are deemed individually and collectively immaterial. The average per subscriber cost for each year was based on actual costs as of June, the midpoint of each year. (Costs for mid-year package changes were not prorated as the net impact to overall tier costs is immaterial). DIRECTV's programming costs per subscriber are uniform across the United States, because program license fees are calculated and paid on a national basis. As such, the per channel rates reflected in the forecasts for 2002 through 2003 do not vary by state or DMA with the exception of the in-market regional sports networks.

f. actual or expected advertising costs.

DIRECTV is providing the attached Schedule VIII(f)(i), a chart showing media spending by market for each of the past four years. Schedule VIII(f)(ii), a chart showing the media spending forecast for 2002 and 2003, is provided to the DOJ under separate cover. Each schedule is broken down into national and local media spending.

IX. Broadband Services

A. Separately for EchoStar and DIRECTV, describe in detail the following information relating to broadband service offerings currently, for each of the past four years, and projected for the next two years.[2]

1. Peak, average and worst case download speeds.

The table set forth in Schedule IX.A.1 provides peak, average and worst case download speeds for each of HNS's DirecPC and DIRECWAY consumer service for 1998 through 2001, along with speeds projected for 2002 and 2003.

2. Peak, average and worst case upload speeds.

The table set forth in Schedule IX.A.2 provides peak, average and worst case upload speeds for each of HNS's DirecPC and DIRECWAY (satellite return) consumer service for 1998 through 2001, along with speeds projected for 2002 and 2003.

3. Other services, including multicasting, proprietary content, mailboxes and storage.

See Schedule IV.A.6, which lists certain additional services offered by HNS to DirecPC and DIRECWAY consumer subscribers.

4. All relevant prices, including those for usage, installation, and equipment, and any bundles of broadband and other products, including MVPD and ISP services.

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[2] Broadband services are facilities-based, two-way services, including high-speed Internet access. Such services may resemble those offered by DSL and cable modem services.

Service Prices

Attached as Schedule VI.A.1(b) is a list of the retail service plans offered by HNS directly to consumers for DirecPC and DIRECWAY during the years 1998 through 2001 and those expected to be continued through 2002. Prices charged in 2003 have not been determined, but are not expected to exceed 2002 price levels. HNS's Powered By partners set their own service prices. Further information on HNS's Powered By partners is included in the response to Interrogatory IV.A.6.

Equipment and installation prices and promotions

Attached as Schedule VI.A.2(b) is a list of standard equipment and installation prices, as well as prices and conditions for promotions offered directly to consumers by HNS for the purchase and installation of equipment necessary for the receipt of DirecPC and DIRECWAY service from 1998 through 2002. The Schedule does not include prices charged by HNS's Powered By partners, who set their own prices and promotions. Further information regarding HNS's Powered By partners is included in the response to Interrogatory IV.A.6.

Broadband Bundled with MVPD

The response to Interrogatory IV.A.1(b) provides information regarding "DIRECWAY Offered Through DIRECTV," which is a co-branded marketing plan under which consumers purchase equipment from HNS but separately subscribe to DBS service with DIRECTV and to DIRECWAY service with HNS. In addition, each of HNS and DIRECTV is responsible for billing and providing customer service for their respective services. Schedule IV.A.6 includes further information regarding the DIRECWAY service offered as part of the "DIRECWAY offered through DIRECTV" service plan.

Current DIRECTV customers receive a $15.00 discount each month for six months of DIRECTV DSL service if they sign up for a minimum commitment. This offer ends on March 31, 2002. It is for new DIRECTV DSL customers only.

The response to Interrogatory IV.A.1(b) also provides information regarding bundled offerings of DIRECTV DSL and DIRECTV.

Broadband Bundled with ISP

The service plans described in Schedule IV.A.6 include ISP service where noted. Certain HNS Powered By partners also bundle broadband service and ISP service, and set their own plans, promotions and rates for their customers independent of HNS. Powered By bundled plans are not included in such Schedule. Further information on HNS's Powered By partners is included in the response to Interrogatory IV.A.6.

DIRECTV Broadband offers consumers ISP services as part of its DSL offering, as further described in the response to Interrogatory IV.A.6.

5. Equipment required by a DBS and broadband customer.

Consumers who wish to receive both DIRECTV's DBS and HNS's satellite broadband Internet services may use the single DirecDuo dish to receive both services (which is large enough to receive both MVPD and Internet service signals from satellites at different orbital locations using different frequency bands).

In order to receive DBS service, the consumer's dish is connected to a set-top box by coaxial cable.

To receive the DIRECWAY "Satellite Return" service, whether using a DIRECWAY dish or DirecDuo, the consumer requires the following additional equipment: a transmit radio for the dish, and Indoor Transmit Unit (ITU) / Indoor Receive Unit (IRU) (also known as a satellite transmit/receive modem). The installation requires mounting the dish to the home (or to a pole mount), and running two CAT-5 cables from the dish to the satellite modem. The satellite modem is connected to the user's PC via a USB cable and port.

In the event that a consumer uses DIRECWAY "dial return" broadband service, the consumer requires a dish connected by one CAT-5 cable to an IRU or satellite receive modem, which in turn is connected to the user's PC via a USB cable and port. The consumer must also use an analog PC modem for uploads over a terrestrial telephone line. An analog PC modem is unnecessary for satellite return broadband consumers.

6. Equipment required by a broadband-only customer.

All satellite broadband Internet services offered by HNS require only one satellite dish. The other equipment required by a DIRECWAY satellite return or dial return consumer is described above in Section IX.A.5.

7. Satellites used, satellite band and location, and geographic coverage.

The table set forth in Schedule IX.A.7 describes the name, owner, orbital position, and geographic carriage of Ku band satellites on which HNS leases transponder capacity in order to provide DirecPC and DIRECWAY services to consumers.

The first SPACEWAY spacecraft is currently planned to be launched in 2003, and to offer commercial service in 2004.

8. Elements of service quality, such as time with reduced download or upload speeds and outages, impact of latency in the uplink and downlink from the satellite, possible loss of signal in heavy rain, average time for a new customer to initiate service, and average time for resolution of customer complaints.

The DIRECWAY service for any remote terminal device is designed to be available 99.5% of the time on average. This includes temporary signal loss from factors such as heavy rain. HNS monitors the loading of each satellite to measure the overall use of transponder

capacity, but does not monitor information regarding time of reduced download or upload speeds for individual consumers.

As with any users of satellite transmission systems, DIRECWAY and DirecPC users experience latency in uplink and downlink communications with the satellites due to the time necessary for the signals to travel to and from geostationary orbit. While such latency results in only sub-second delays, it may have an impact on certain applications, such as "twitch-games."

Occasionally, the system does experience temporary signal loss due to heavy rain and other environmental conditions.

The current average time period between the date a consumer first orders the DIRECWAY service and the date equipment is installed is approximately **[Redacted]**.

During the two-week period ending March 10, 2002, **[Redacted]** of consumer-service issues were resolved within twenty-four hours. **[Redacted]** were resolved within **[Redacted]**.

The SPACEWAY satellite platform is currently planned to be operational in 2004. End-user services will be marketed under the DIRECWAY brand and, therefore, elements of general customer service will be handled using the same processes as current Ku band services. Other elements of anticipated service quality related to the satellite platform, such as anticipated outages and speeds, are under development and have not yet been defined. However, the SPACEWAY platform has been designed to offer the same or better quality of service as existing Ku band systems.

B. For each satellite currently used by EchoStar or DIRECTV to provide broadband services, provide:

1. The capacity available on that satellite for provision of broadband services to the home and to small, medium and large businesses in total Gbps.

HNS currently offers satellite broadband Internet service to consumers by leasing transponders on the various Ku band FSS satellites listed below that are operated by other companies. (DIRECTV DBS satellites are not used to provide broadband services.)

The actual capacity of the transponders leased by HNS on each satellite as configured for DirecPC and DIRECWAY consumer service, measured in megabits per second (Mbps), is set forth below. Available capacity for a given consumer at a given time is affected by myriad factors, some subscriber-related and some technology-related. Subscriber usage patterns impact the amount of capacity available at any given time. For example, the use of a high-bandwidth application such as streaming media by a subscriber would decrease, for a limited amount of time, the capacity available on the transponder in use that would otherwise be accessible by other subscribers. In addition, since transponder capacity is "shared" across the geographic coverage of the satellite, and each satellite has a footprint which covers at least

CONUS, the amount of transponder capacity available for a given subscriber would depend upon the concurrent use of that satellite transponder by other subscriber nationwide.

[Redacted]

2. The geographic coverage of that satellite for the provision of broadband services.

[Redacted]

3. The number of subscribers that can be served simultaneously by that satellite with current service reliability levels.

As explained above in the response to Interrogatory IX.B.1, it is difficult to precisely calculate the number of subscribers that can be simultaneously provided satellite Internet broadband service at current reliability levels using a Ku band satellite platform. DirecPC and DIRECWAY, like cable broadband Internet service, provide service on a "shared" system whose capacity is affected at any given time by simultaneous use of the system by multiple subscribers. One subscriber's use of high-bandwidth applications, during certain times of day, impacts the amount of capacity available for use by other subscriber. Thus, any estimation of subscribers supportable by a given satellite is based on peak periods of use, the frequency and duration of the use of high-bandwidth applications (the very applications which make broadband service attractive to residential and business customers over other forms of Internet access), and the desired level of service availability to subscribers.

The table set forth at Schedule IX.B.3 sets forth the number of transponders leased by HNS for use in providing DirecPC and DIRECWAY service for each satellite, the approximate number of consumer subscribers currently supported by each satellite, and the estimated number of consumer subscribers supportable under current quality of service levels offered to consumers.

4. Any plans that will affect the capacity, geographic coverage or number of subscribers that can be served by the satellite.

[Redacted]

C. Describe in detail any plans for additional capacity for satellite broadband services, including any services that might be offered in the Ka band. Include in your description the upload and download speeds that you are considering offering, pricing plans and the number of customers that can be served in each geographic region.

HNS currently plans to commence offering DIRECWAY service over the SPACEWAY Ka band satellite platform in 2004. Through the combination of on-board processing, advanced spot beam technology and efficient re-use of spectrum, HNS expects that SPACEWAY satellites will provide greater capacity for broadband Internet service than currently is available from Ku band spacecraft. The greater available capacity, in turn, should

enable the use of higher-bandwidth applications and support more subscribers than is currently possible today using a Ku band platform.

HNS has commenced construction of three SPACEWAY spacecraft. The first spacecraft is currently planned to be launched into 99° W.L. in mid-2003. Commercial service to the United States and other parts of the Americas is planned to commence in 2004, following in-orbit and system testing. The other two spacecraft will not be launched earlier than 2004. Final plans for the orbital locations of those two spacecraft, and for the locations of other licensed Ka band spacecraft, remain to be determined.

The satellite design for the SPACEWAY system that will serve the United States supports a total throughput of approximately 10 Gbps on a single spacecraft. **[Redacted]**

The SPACEWAY system is designed to dynamically allocate a portion of its total capacity based on the demand for service in a given geographic area. There are 112 service cells within the coverage area of the spacecraft, each about 300 miles in diameter.

The SPACEWAY uplink capacity is distributed among 112 simultaneously operating uplink beams. **[Redacted]**

The SPACEWAY downlink capacity is distributed among 24 simultaneously operating downlink beams that "hop" around the 112 service cells, and are pointed to one of seven pre-defined points on the ground within each service cell in order to maximize the quality of service. Each of the 24 downlink beams is capable of providing 440 Mbps of capacity. Hopping and pointing operations are based on traffic demand requirements within each service cell. The downlink beams will "hop" more frequently to, and dwell longer over, those cells with greater traffic demands. The spacecraft also contains a wide-area downlink beam that, in lieu of spot beam operations, covers an area as large as CONUS and supports service at 110 Mbps or 142 Mbps across that area. For broadband Internet service to consumers, HNS expects that typical data rates on SPACEWAY will be approximately **[Redacted]** on the downlink, and approximately **[Redacted]** on the uplink. The SPACEWAY satellite platform has the capability to offer service at higher data rates to business users and consumers, the implementation of which will be determined in light of then-current market and commercial conditions.

HNS is still developing service offerings and pricing plans for SPACEWAY. HNS expects that SPACEWAY will offer a range of service offerings not currently possible using Ku band systems, with possible combinations of very high quality-of-service levels and high-bandwidth applications. The SPACEWAY business plan primarily targets business customers because doing so increases the commercial viability of this $1.8 billion system and reduces the business risk. It is expected that the SPACEWAY satellite platform will also be used to provide DIRECWAY services to consumers.

However, the cost of actually marketing SPACEWAY as a ubiquitous consumer service on a broad scale, and equipping consumers to use SPACEWAY-enabled services, most likely would not be commercially feasible without the proposed merger. Actually marketing and deploying SPACEWAY services to U.S. consumers will require substantial additional

investment far in excess of the $1.8 billion of capital costs for the SPACEWAY system. Particularly in the current economic climate, it would be very difficult to obtain funding for the significant cash resources needed to acquire consumer subscribers. Such an investment makes sense only if the costs of acquiring consumers are at a level that is sustainable by the expected revenue stream from those consumers, taking into account anticipated subscriber churn. Hughes alone has a very limited financial ability to provide such funding, which the merged entity will be better able to provide.

SPACEWAY, like cable modem systems and today's Ku band satellite services, will be a "shared" system whose capacity is affected at any given time by a simultaneous use of the system by other users. The available capacity to any given geographic location therefore is a function of traffic demand, the desired level of service availability, and the operational configuration of the spacecraft described above. Depending on actual traffic, quality of service levels and the amount of bandwidth demanded by business and consumer customers, Hughes now estimates that it will be able to support the provision of broadband Internet service to business users and approximately 1.0 million to 1.3 million consumer users in the U.S. per SPACEWAY satellite.

D. Describe any advantages that a customer might realize by receiving satellite broadband and DBS services from the same provider, and any possible disadvantages to a customer from obtaining satellite broadband and DBS services from the same provider.

An integrated satellite broadband and DBS provider is able to provide customers with significant benefits by serving as a "one-stop shop" for both video and data services. Thus, an integrated provider can offer customers the only real alternative to the combined video/cable-modem offerings that incumbent cable operators have begun to aggressively market. Obtaining broadband and DBS services from a single satellite operator provides customers with several advantages over obtaining those services separately from different providers, including: (i) the use of integrated equipment, such as a single dish; (ii) lower aggregate service, equipment and installation costs, (iii) providing and receiving a single bill; (iv) providing a single point of customer service; and (v) offering subscribers additional applications and services.

Integrating a satellite broadband provider into a DBS provider allows the DBS provider to offer customers the only real alternative to new digital cable offerings. Incumbent cable companies hold a dominant market position and their rollout of digital systems is reducing or eliminating many of the competitive advantages that DBS operators once had over cable television. Digital cable is erasing DBS firms' historical quality and channel advantages and allows cable firms to offer a video/cable-modem bundle, and true two-way video on demand services, that EchoStar and DIRECTV standing alone cannot begin to match. Integrating a satellite broadband provider with a DBS provider offers a way to respond to the competitive threat posed by the upgrade of cable plant, and thereby offer consumers a meaningful alternative to cable.

An integrated provider allows consumers to purchase and use integrated equipment, including a single dish, at lower cost and without concerns about equipment

incompatibility. For example, the DirecDuo dish supports both DIRECTV and DirecPC services. EchoStar and StarBand offer a similar one-dish solution for their services. Using a single dish also benefits the consumer, because installing separate dishes for broadband satellite service and DBS service requires additional equipment and installation costs, takes up additional roof space, results in more aesthetic concerns, and poses potential line-of-sight issues in positioning multiple dishes.

An integrated provider makes the manufacture and retail of a single dish for both broadband and DBS more feasible and inexpensive, because it facilitates the design and manufacture of equipment that is compatible with both services, and the promotion of cross-service offerings and equipment sales at the retail level. Without service integration, a single dish is more expensive for the consumer because of the increased risks for the manufacturer to make and for retailers to sell. A DBS-only provider, for instance, would have less incentive to promote or subsidize the purchase of more expensive and complex single dishes that are also capable of receiving another provider's broadband services. In addition, a customer may face equipment compatibility problems as he or she seeks to obtain service from different service providers over a single set of equipment. On the other hand, an integrated provider who receives benefits from the sale of both services to the customer has an incentive to promote and subsidize single dishes, and to make sure that the equipment functions as intended.

An integrated DBS/broadband provider can also offer consumers lower total monthly service, equipment and installation charges than separate non-integrated providers likely would be able to offer. A portion of each customer's monthly service charge includes the cost incurred by the provider to acquire that customer, including advertising costs, commissions, promotions, subsidies and other sales costs. An integrated provider could lower the relative cost of customer acquisition by presenting new customers with a combined service package, rather than incurring separate acquisition costs for each service. In addition, a DBS provider who, for example, just started offering satellite broadband services, could reduce acquisition costs for that service by marketing it to its existing DBS subscriber base. Households already receiving DBS service are more likely than other households to subscribe to satellite broadband service, because those consumers are comfortable with satellite-based equipment and service, and have clear line-of-sight and equipment positioning already established. By providing satellite broadband to its existing DBS customer base, an integrated provider also could achieve economies in billing operations. In addition, an integrated provider would expect to have less churn for a combined DBS and broadband offering (its subscribers will tend to be "stickier" and less likely to switch to an alternative service provider), and thereby lower subscriber acquisition costs. These types of cost savings could be passed on to customers in the form of lower monthly service charges and higher equipment subsidies. Moreover, new customers of an integrated provider would be saved the costs of purchasing and installing equipment obtained from separate broadband and DBS service providers. An integrated provider is better able to coordinate the simultaneous installation of DBS and broadband services, thereby decreasing the cost and disruption of the installation process.

An integrated provider would also provide customers with the benefit of a single bill for both broadband and DBS service, as well as a single customer service point of contact. Both would provide the customer with an ease of use and comfort not achievable by separate

service providers, and in turn result in a more attractive offering for both broadband and DBS service.

Lastly, an integrated service provider will be able to offer applications and services to their customer base that separate broadband and DBS providers might not be able to do. An integrated provider has the opportunity to offer customers access to services that bring Internet-centric content to the television, and television-centric content to the personal computer and other digital devices. For example, an integrated provider can arrange for the necessary hardware and software to be included in the provider's DBS receiving equipment to allow the receiver to access broadband Internet content from the provider's broadband network as well as DBS content. This integrated offering provides the customer with seamless access to both broadcast and two-way content (*e.g.*, a video-on-demand service where current titles are delivered over the broadcast network and older "library" titles are available over the two-way broadband network). If the content and supporting technology is provided by multiple entities, then the overall customer experience is likely to be complex and less satisfying than a truly integrated offering would provide.

Applicants are generally not aware of any material disadvantages to a customer that obtains DBS and broadband Internet services from the same satellite provider rather than two separate providers. Possible exceptions include the fact that if one service provider's dish or customer equipment fails, the other one may still be able to offer service to the customer, and the fact that service problems with one service may affect the customer's satisfaction level for the entire package.

E. Describe any advantages that an integrated satellite broadband/DBS provider might realize relative to two integrated suppliers of satellite broadband and DBS services.

A single integrated satellite broadband/DBS provider could realize a number of significant advantages, relative to two integrated suppliers of broadband and DBS services, many of which would benefit consumers.

DBS Related Benefits

First, as recently announced by the Applicants, a direct result of the combination of two integrated suppliers of broadband and DBS services is that consumers across the United States will have access to local broadcast channels with digital-quality television picture and CD-quality sound *in every one of the 210 television markets in the United States*. This combination will also permit greatly expanded high-definition television ("HDTV") programming, pay-per-view and video-on-demand ("VOD") services, educational, specialty, and foreign language programming and interactive services, and will create significant cost savings that will allow DBS to provide a better value to consumers and become a more effective competitor in the MVPD market.

Currently, each of DIRECTV and EchoStar duplicates the vast majority of the programming carried by the other DBS system. By ending this duplication, and thereby freeing

up spectrum, the combined entity will have roughly twice the capacity for programming as each company standing alone. Because of this wasteful duplication of programming, neither EchoStar nor DIRECTV has the stand-alone capacity to provide local programming to America's smaller communities, particularly after balancing the capacity demands for local channels with the competitive necessity of offering a wide array of existing national programming as well as the importance of adding new programming, such as HDTV, pay-per-view, VOD, interactive and educational channels.

The capacity created by the rationalization of spectrum, as well as the cost savings discussed below, make it possible for New EchoStar to significantly expand national programming and new services, plus serve every DMA – all Americans, including in rural areas – with local channel service. It will also provide rural Americans with access to digital quality pictures and CD quality sound that they have never enjoyed before and could not receive but for the merger. Indeed, a significant portion of these subscribers may not even be able to receive quality over-the-air television broadcast signals. Thus, the combination will allow New EchoStar to actually increase the number of television households in rural areas.

The enhanced ability of New EchoStar to provide more programming choices necessarily means more carriage opportunities for independent programmers who historically have had trouble gaining carriage on cable systems. To maintain its competitive edge against cable operators and other competitors, New EchoStar would have a clear incentive to differentiate itself through innovative independent programming sources.

If DIRECTV and EchoStar are to succeed, they must match the current dominance of cable operators, as well as the dire competitive threat posed by the upgrade to digital cable. Digital cable is erasing DBS firms' historical quality and channel advantages and compounds the cable companies' incumbency advantages. It allows cable firms to offer a video/cable-modem bundle, and true two-way video on demand services, that two DBS providers alone cannot begin to match. Combining the subscriber bases of DIRECTV and EchoStar produces a stronger, integrated satellite broadband/DBS provider, and a company that is better able to finance the cost of actually marketing broadband services to consumers and equipping them. Thus, the merger enhances the chance that DBS providers will be able to offer to U.S. consumers a competitive alternative to new digital cable offerings.

In addition to freeing up DBS spectrum for more programming choices, combining two integrated suppliers of broadband and DBS services will create a larger and more efficient satellite fleet. Presently, allocation of authorized spectrum requires less than optimal placement of satellites, such as DIRECTV's need to use a satellite at the 110° W.L. location even though it is only authorized to operate 3 DBS frequencies. Moreover, in locations where both EchoStar and DIRECTV have satellites, the merger will create built-in, in-orbit backups that will help prevent or reduce the impact of customer service interruptions. Thus, combining the two companies will provide a unified DBS firm with a stable and better utilized satellite fleet, and will also provide much greater flexibility to provide additional economical in-orbit backups.

Because of the economies of scale resulting from the combined DBS customer base, the Applicants anticipate significant savings in operational and manufacturing costs in

providing improved equipment and services. For example, combining their operations permits utilization of a standardized set top DBS box. By increasing the volume of units ordered, substantial manufacturing cost savings could be used to reduce charges to customers. The increased potential customer base would also make more economically attractive opportunities to integrate New EchoStar equipment with other services and devices. By increasing the size of the market, companies such as television or computer manufacturers may be more interested in creating products that integrate DBS and broadband abilities directly into their products. Consolidation of the service departments of EchoStar and Hughes, such as customer service and billing operations, would allow the combined company to take advantage of the most efficient aspects of both companies to raise the level of service it would provide to customers. In addition, because of the economies of scale, it is anticipated that the cost of providing this improved service will decrease on a per customer basis. Moreover, the increased customer base will also allow New EchoStar to decrease programming costs and may be the basis for creating a new programming platform. Together, these synergies will create a dynamic company that will be able to vigorously compete with cable by offering consumers a more robust service at a cost lower than either DBS provider could achieve alone.

Similarly, the merger will allow the companies to eliminate duplicative operational practices. For example, the cost and time of programming backhaul and uplink would be halved because New EchoStar would only need to perform these functions once where today each company must perform these operations separately.

Broadband Related Benefits

To date, satellite broadband service to consumers has been inhibited by a combination of factors, including spectrum constraints, data speed, and most importantly, very high fixed costs and subscriber acquisition costs relative to competitive services, such as cable modem and DSL services. These factors, among others, have prevented satellite broadband providers from attracting a significant number of subscribers. EchoStar's current offerings through StarBand, and Hughes's through DIRECWAY, both rely on leased Ku band transponders – a relatively expensive means of providing satellite-based Internet access. Moreover, Ku band CONUS transponders have limited capacity for broadband service, and limited numbers are available for lease at relatively high prices. Consequently, it would be very difficult, if not impossible, for either of these satellite broadband providers to achieve sufficient scale to spread fixed costs or realize economies of scale in the manufacture of consumer premises equipment ("CPE"), such that the current services could be offered at a price that is acceptable to consumers, or competitive with terrestrial broadband providers, unless these companies incurred very high subscriber acquisition costs that (i) might not be recovered through monthly service revenues, and (ii) are difficult, if not impossible, to finance in the current economic environment.

One alternative to the current means of providing satellite broadband service is to construct and launch new satellites in the Ka band. Although this strategy avoids some of the capacity constraints that afflict broadband services in the Ku band, it requires the upfront investment of hundreds of millions, if not billions, of dollars in complex satellites, uplink facilities and CPE technology. The deployment of these Ka band satellites has taken longer, and

will require more capital, than many Ka band licensees have been able to sustain. Moreover, the use of Ka band satellites does not have any direct effect on the high cost of CPE, and at least initially increases, rather than reduces, CPE cost, which is a significant impediment to broader acceptance of satellite broadband services.

In the Ku band many consumers view CPE cost as unacceptably high, and Ka band CPE will be still more expensive. A satellite modem costs approximately $225-375. A Ku band transceiver costs $175-300, while a Ka band transceiver will initially cost at least $300 to $500. The antenna and mount costs are approximately $100. The average cost of a professional installation is about $150-$200. In addition, a dealer commission of about $250 is usually paid to acquire broadband consumers. As a result, up front equipment and installation costs for consumers are substantially higher for satellite broadband than for DSL or cable modem services. Unless these CPE and subscriber acquisition costs can be reduced significantly, satellite Internet will not likely grow out of a small-scale, high-priced niche in the consumer market.

Two distinct integrated DBS and satellite broadband firms would face substantial obstacles in attempting to achieve the necessary scale economies in the manufacture of equipment and acquisition of consumer subscribers that would allow them to compete effectively with cable modem and DSL services. EchoStar and Hughes estimated in the Application that at least 5 million consumer broadband subscribers would be necessary in the next five years to justify the significant up front investment and subscriber acquisition costs associated with actually marketing and deploying a ubiquitous two-way broadband service to consumers. Even given reasonably optimistic assumptions about the "take rates" at which existing or new DBS subscribers will buy satellite broadband service, the initial DBS subscriber base required to support the eventual acquisition of at least 5 million broadband subscribers is significantly greater than either EchoStar or Hughes can provide separately.

Existing Ku band satellites have very limited scale economies due to the limited capacity of each transponder. While Ka band satellites optimized for consumer broadband services can benefit from greater scale, they too are capable of serving only a finite number of customers, beyond which point additional satellites and spectrum resources must be added. In addition, these complex satellites require a substantial investment in new commercial technologies and significant lead times – several years – in terms of R&D, design, construction, and launch. Consequently, a firm that hopes to have the capacity to serve several million subscribers must make the substantial investment to do so well in advance of actually acquiring anywhere near that number of customers. In the meantime, the relatively small scale of the broadband business results in a price that is too high to compete effectively with cable modem and DSL services. This smaller scale forces a lesser number of subscribers to bear the very high fixed costs, and prevents the firm from achieving the economies of scale necessary to reduce both fixed and variable costs. It is these daunting economic barriers – very large initial investment in expensive satellites coupled with high up front costs to acquire new subscribers -- that have stifled continued investment in satellite Internet technology.

Moreover, neither Hughes nor EchoStar, standing alone, has enough available orbital resources in the CONUS portion of the geostationary arc to achieve the requisite critical

mass of subscribers to actually provide an economical one-dish satellite broadband service to residential users. Based on Hughes's estimates that a SPACEWAY spacecraft will be able to serve 1.0-1.3 million residential users in the U.S., in order to achieve just 5 million residential broadband subscribers, a single provider would have to launch and operate Ka band satellites to at least four orbital locations within approximately 22° of one another and within the CONUS portion of the geostationary orbital arc. Separately, each DBS firm currently has available two orbital locations within this range, and PanAmSat controls one more such location. Together, however, the companies would have sufficient satellite and spectrum resources to achieve this critical mass of broadband subscribers.

The post-merger integrated DBS/satellite broadband firm, in contrast, would have a number of advantages that would make it more likely that the necessary investment would be made and the necessary scale realized to offer competitively priced consumer broadband services.

- *Mitigation of capacity constraints.* The merger would allow New EchoStar to combine the necessary orbital and spectrum resources required to reach a critical mass of at least 5 million consumers within the next five years to justify an investment in ubiquitous consumer broadband deployment. Today, neither company alone has the orbital resources close enough together to achieve this subscriber base. In addition, an increased number of satellites would allow more efficient allocation of spot beam capacity, and consequently more efficient use of whatever capacity exists. As a practical matter, the merger will increase the amount of usable capacity.

- *Larger pool of DBS subscribers.* A single integrated firm would have the benefit of consolidating the DBS subscriber bases of both firms. Current subscribers of DBS services are more likely to subscribe to satellite broadband services because they know their households have a clear line of sight to the southern skies and because they have a demonstrated willingness to place the necessary satellite equipment at their homes. This larger subscriber pool can in turn be leveraged into significant efficiencies: it reduces costs in the manufacture of CPE by encouraging investment in research and development and manufacturing economies; it spreads fixed costs over a larger base; it allows for more efficient use of satellites and spectrum; and it reduces the cost of capital by lowering the risk profile of a residential satellite broadband venture. Scale is also important because each of the factors described above allows the firm to grow more quickly, and thereby achieve an efficiency feedback loop.

- *Lower costs.* The single integrated firm will have lower overall costs of providing service than two separate firms. It will also make economically justifiable future investment in research and development that would likely be needed to bring down CPE costs. Consumer equipment costs, a substantial factor that differentiates satellite broadband from competing

services, remain too high (even with the substantial subsidies already offered by the satellite broadband firms). Substantially increasing the subscriber base will result in manufacturing efficiencies and volume discounts that will reduce these consumer equipment costs. It is estimated that it will be necessary to have volumes in excess of a million terminals sold per year to achieve meaningful savings in that area.[3] Similarly, Ka band equipment is not yet available in the mass market, but the more quickly Ka band service can be introduced, the lower the costs will be. Such higher volumes could also lead to decreases in installation costs and dealer/retailer commissions per subscriber as installers, dealers and retailers become more amenable to lower per subscriber fees. The installation of one dish during a single visit for DBS and broadband services further decreases total costs. In addition, a consolidated firm would need fewer total backup satellites for its service; with consolidation, only a single backup satellite might be necessary. Consolidation would also permit rationalization of certain facilities such as billing, gateways, call centers, and network operations centers, all resulting in lower costs.

- *Acceptable risk profile.* The impediments faced by each company standing alone are so high that their current or prospective investors would not likely accept the risk of deploying a full-scale consumer broadband satellite service. Illustrating the high-risk profile of such projects today is the fact that none has been funded to completion and deployment. The perceived risk of a Ka band project can be brought down to an acceptable level by virtue of the spectrum and satellite capacity efficiencies to be secured by the merger, combined with the cost efficiencies that will flow from the larger pool of DBS subscribers to whom a broadband service can be marketed.

- *Higher rate of growth.* The increased scale of the single integrated firm will result in an increased rate of growth. Rapid growth is critical to effective competition with cable-modem and DSL, both of which are expanding rapidly and are "sticky products" relative to satellite broadband due to the difficulty of changing Internet addresses and reconfiguring one's system, and the high up-front cost of satellite broadband CPE. Thus, satellite broadband not only has to achieve the necessary scale, it has to do so in the face of cable-modem and DSL providers who are building market share far more quickly than satellite providers are able to do. Rapid growth also means a more rapid return on investment, which further reduces costs and mitigates the investment risk associated with the

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3 Experience with cable modems illustrates the benefits that real economies of scale could bring to satellite broadband CPE. As recently as 1998, cable modems cost $300 a piece, shipping approximately 500,000 units that year. This year cable modems cost about $75, with anticipated shipments of between 10 and 15 million units.

development and deployment of satellites well before they will be called into use.

- *Enhanced marketing capabilities.* The consolidated firm would have an enhanced ability to introduce DBS users to a truly competitive satellite broadband service. Because customers are resistant to having two dishes, a service provider would have to supply a single dish that obtains broadband and DBS service from spacecraft in approximately a 22° orbital arc. A single consolidated firm could make more efficient use of the available orbital slots within this arc. The ability to effectively offer both DBS and broadband service is critical to providing effective competition with cable for several reasons. Most significantly, digital cable offers both MVPD and broadband services, and DBS will need to match this offering and provide cross-product discounts and unified billing. In addition, combining broadband service with MVPD service should result in lower churn, which decreases subscriber acquisition costs and allows the firm to take more business risk in investing in the customer.

- *Elimination of duplicative spectrum use.* There is and will be a multicasting market on the data side of the business, and consolidation would eliminate the wasteful duplication that would occur if both firms were multicasting simultaneously the same kind of information.

X. DBS Equipment

A. Provide a complete statement and interpretation of any provisions in contracts between DIRECTV or EchoStar and their equipment manufacturers/suppliers that limit the ability of the manufacturer to include particular components (*e.g.*, high speed modems), features (*e.g.*, electronic program guides or software programs), and functions, including the ability to access other services (*e.g.*, terrestrial television broadcasting, cable television).

Equipment manufactured for use with DIRECTV's service must meet certain specifications and use specific compression technology. In contracts with manufacturers, DIRECTV requires manufacturers to produce equipment that meet these specifications and uses such compression technology. Without maintaining quality and technical uniformity, equipment made by different manufacturers would not be able to operate together or receive DIRECTV's service. It is not DIRECTV's practice, however, to limit the ability of manufacturers to include particular components, features or functions.

B. Describe the circumstances (*e.g.*, certain programming combinations or programming and broadband services) under which a subscriber would need to access satellites in different orbital slots; the number of subscribers who currently do so; technical characteristics of the dishes required to fulfill this function; circumstances under which a subscriber would need multiple

dishes to fulfill this function, or would be required to purchase a new dish; and an estimate of the number of subscribers that need multiple antennas, along with a forecast of how the number of subscribers needing multiple dishes will change over the next five years.

DIRECTV's core programming, as well as all of the local broadcast channels currently offered in 41 DMAs, is offered from the four DIRECTV satellites, DIRECTV 2, DIRECTV 3, DIRECTV 1R and DIRECTV 4S, collocated at the 101° W.L. orbital position. Additional programming is offered from DIRECTV satellites located at the 110° W.L. location (DIRECTV 1), where DIRECTV is licensed to use three DBS frequencies, and the 119° W.L. orbital location (DIRECTV 6), where DIRECTV is licensed to use eleven DBS frequencies. For example, the 119° location has been or will be used to provide subscribers with Spanish-language programming carried in the DIRECTV PARA TODOS® programming packages; other foreign language channels; HDTV channels; public interest programming; and local broadcast programming in additional DMAs beyond the 41 DMAs served from the 101° W.L. location. The capacity at 110° W.L. in the past has been used to carry certain local channels, and is now currently used for a DIRECTV promotional channel.

Fewer than **[Redacted]** DIRECTV subscribers take advantage of non-101° W.L. programming opportunities today. For customers interested in this additional content, a different "oval" antenna has been developed, measuring 18 x 24 inches, which can have either two (to receive programming from the 101° W.L. and 119° W.L. locations) or three (to receive programming from the 101° W.L., 110° W.L., and 119° W.L. orbital locations) Low Noise Block ("LNB") converters. These antennas are readily available in the consumer electronic market today from several suppliers.

In no case does a DIRECTV television subscriber require multiple dishes to receive multichannel video programming. Most DIRECTV subscribers use a small 18-inch dish to receive multichannel video programming from 101° W.L. A subscriber is required to obtain or purchase a multi-slot dish (that is, a dish capable of receiving DBS signals from more than one orbital position) if he or she wants to add additional services beyond the core DIRECTV programming packages or local channels for markets other than the 41 DMAs currently served from 101° W.L. The number of DIRECTV subscribers who use multi-satellite dishes is expected to rise over the next few years as additional local markets are added at the 119° W.L. orbital location, particularly upon the deployment of the DIRECTV 7S spot beam satellite in 2003 at 119° W.L., and with increased consumer interest in receiving HDTV programming. The size of this increase will be related to the customer interest for these services.

New DIRECTV subscribers who also want DIRECWAY Internet access service can obtain both services by using a single dish, marketed as "DirecDuo." Existing DIRECTV subscribers that want to add DIRECWAY Internet access service can do so by either replacing the existing dish with a DirecDuo dish or adding a second dish for DIRECWAY service. The DirecDuo offering uses a 22x38.5 inch elliptical dish antenna. This capability is discussed further in the Hughes Respondents' answers to IX.A.5 and IX.D.

C. Explain EchoStar's plans, if the companies merge, to either move to a single reception standard for all DBS customers or to continue to use two different and incompatible reception systems for DBS customers. Describe the technical differences between the EchoStar and DIRECTV systems. Also, explain why the benefits of such a single reception standard cannot be achieved by means other than merger.

EchoStar and DIRECTV employ different digital standards, with EchoStar using Digital Video Broadcasting ("DVB") and DIRECTV generally using the DIRECTV proprietary protocol. Under current transition plans, which are subject to change and refinement, New EchoStar ultimately will move approximately 150 channels of duplicative core programming to either the 110° W.L. orbital location, using EchoStar's DVB standard, or to the 101° W.L. orbital location, using DIRECTV's standard. These 150 channels represent a significant share of the spectrum efficiencies realized by the merger.

Several factors will affect whether core programming is moved to 110° W.L. or 101° W.L., including service availability in all relevant markets (including Alaska and Hawaii), successful launch and operation of satellites, and software programming development and contractual restrictions. Regardless of where such core programming ultimately is located, prior to the merger, EchoStar and DIRECTV will jointly develop a "dual speak" receiver capable of receiving both DVB and DIRECTV standards, and a "triple head" dish capable of receiving signals from all three CONUS orbital locations (collectively, "New Equipment"). This new equipment also will employ a new conditional access system. Also prior to the merger, EchoStar will complete its planned upgrading of subscribers to the Dish 500 equipment, which will enable all Echostar subscribers to view two orbital locations.

Except for equipment already in distribution channels, under the current transition plan, which remains subject to change, all new subscribers to New EchoStar will receive New Equipment. As soon as possible after the merger, existing DIRECTV Para Todos subscribers will receive New Equipment, free of charge, in order to receive New EchoStar's Spanish language programming, thereby allowing new uses of capacity on three transponders at the 119° W.L. orbital location.

Also as soon as possible after the merger, DISH subscribers in the top 40 DMAs who subscribe to local channels will be switched to New Equipment, free of charge, and will receive their local channels from 101° W.L., thereby allowing EchoStar VII and VIII to serve different markets than they currently are scheduled to serve. EchoStar and DIRECTV anticipate that EchoStar VII and VIII could serve about 60 additional markets. It is expected that these first two steps would be completed within 8 months after the merger is completed.

After completing the above steps, DIRECTV subscribers in the 60 markets served by EchoStar VII and VIII and who commit to subscribe to local channels would receive New Equipment, to the extent required, free of charge. After DIRECTV 7S is operational, a total of about 150 DMAs would receive local channels, and DIRECTV subscribers in the additional markets who commit to local service would receive New Equipment free of charge.

Once New EchoStar 1 is operational, the remaining DMAs (210 total) would receive local channels. Remaining DIRECTV subscribers in the additional local markets who commit to subscribe to local channels would receive New Equipment, free of charge.

Finally, subscribers who do not receive New Equipment under any of the situations outlined above ultimately would receive New Equipment free of charge to the extent necessary to receive the programming they are receiving at the time. Specifically, New EchoStar either will provide the remaining DIRECTV subscriber base or the remaining EchoStar subscriber base with New Equipment. If DIRECTV subscribers receive the New Equipment, core programming will be provided at the 110° W.L. orbital location (DVB), the 101° W.L. orbital location would be used primarily for local channels, advanced services (HDTV, VOD, and interactive) and other offerings, with 119° W.L. used for Spanish, international, business, and pay-per-view programming.

If EchoStar subscribers receive the New Equipment, core programming will be provided at the 101° W.L. orbital location (DIRECTV format), while the 119° W.L. orbital location would be used primarily for Spanish language and international programming, business television, expanded pay-per-view, and advanced services. The 110° W.L. slot would be used primarily for local channels and other services.

EchoStar and Hughes have initiated preliminary investigations into the flexibility and limitations of the hardware/software configurations of the collective fielded hardware of the two corporations. The principles underlying each company's configuration are fundamentally different, and the applicants do not believe that the companies would or could feasibly move to a single reception standard without the merger. At the same time, aided by significant similarities in their service delivery architectures, the Applicants believe that they can ensure an orderly and simple transition to the New Equipment as described above.

Differences Between EchoStar and DIRECTV in Fundamental Principles. DIRECTV has enlisted the design and production capability of a number of different recognized consumer product manufacturers (*i.e.*, HNS, Panasonic, Sony, Thomson Consumer Electronics). DIRECTV defines a basic set of capabilities that it requires, and the manufacturer designs and produces product to match those requirements. DIRECTV does not own or control the actual detailed design.

On the EchoStar side, all receiver design and manufacturing is strictly controlled by EchoStar engineering. There is therefore a certain commonality between the features and underlying technology of all of the receivers in the EchoStar family of products. Similarly, EchoStar has developed every receiver with the ability to receive a software download over the satellite. This means that every receiver in the field is capable of being completely reprogrammed without visiting the customers' locations. More recent EchoStar designs incorporate chipsets that allow for either DVB or DIRECTV format compatibility.

Service Delivery Architectures. The service delivery architectures of the two companies are very similar. Both companies receive content on digital tape (for PPV movies), from "cable" distribution satellites (for subscription channels such as CNN) and as dedicated

digital backhauls from major cities (for local-into-local channels). Both companies utilize very similar broadcast centers and satellites to deliver this content to their customers. The most significant technical differences in the delivery architectures are as follows:

- Modulation Error Coding
- Encoding Transport Stream Structure
- EPG Data Transport Stream Structure
- Conditional Access Systems
- Multi-sat switching capability (DiSesc)

Both firms use MPEG 2 video and audio encoding, but DIRECTV's transmission format at the "transport" layer packetizes the information differently. The companies use different broadcast formats for their electronic program guide information and they use different suppliers and technology for their conditional access systems. For example, even though each firm uses ISO standard smart cards to control the authorization of receivers and services, the cards' embedded microcomputers are different and the smart card software is also unique to each system.

The transport layer differences of the two systems are summarized in ITU-R Recommendation No. 1294, Geneva, Oct. 1997. In this document, System A generally corresponds to the EchoStar system and System B generally applies to the DIRECTV delivery system.

The Merger Is the Only Path to a Single Standard. As described above, the companies plan, after consummation of the merger, to convert to a single standard for New EchoStar's core programming.

The benefits of a single standard in conjunction with the dual-speak receivers described above – primarily flowing from an end to duplicative use of spectrum – are not achievable outside of a merger. The investment required to move to a single standard, is justifiable only if the single standard allows spectrum sharing – both companies using the same spectrum to provide programming for which they now use different spectrum. In the absence of a merger, however, this would require one company or both to cede control over a significant part of its "crown jewels" – its core satellite and spectrum resources. The parties tried to negotiate an agreement on this issue and failed because it was unworkable.

Absent a merger, there are only three options for control of a spectrum-sharing arrangement – control by DIRECTV, control by EchoStar, or shared control with the potential for deadlock. Without its satellite and spectrum assets, neither EchoStar nor DIRECTV has a business. Control of core assets by a competitor would be ruinous, as a dispute could lead to the controlling party severely prejudicing the other's business. The controlling party would make critical decisions affecting both participants, particularly which programming was carried at which orbital location, and thus to which consumers it would be available. This would leave the non-controlling firm vulnerable to a number of risks, including: manipulation of the joint programming to favor the controlling party's customers; manipulation of the joint programming to favor content which the controlling party has more favorable contract terms, thus effectively

raising the non-controlling party's costs; and less responsiveness to technical problems that affect the controlling party's customers less than others.

"Shared" control would create the problems posed by committees of two entities with often adverse interests, which are unable to effectively resolve disputes, vulnerable to brinksmanship by either side, and thus inherently unstable and at constant risk of stalemate or disintegration. (For these reasons, joint ventures with two competitors sharing their crown jewel assets are rare in any industry.) Because of the importance of the competitive decisions related to the crown jewels, only the stability and certainty of the merger provide an adequate foundation for the success of a move to eliminating redundancy. Take, for example, the need to adjust the jointly-carried programming to meet competition from cable and others. Both EchoStar and DIRECTV might agree that changes were needed, but each might have a starkly different agenda concerning the nature of the changes to be made, because of different consumer preferences, differences in contracts with programmers, or merely differences in strategy. If they could not agree, then changes could not be made and both would suffer serious competitive harm. Alternatively, disagreements or brinksmanship could cause the joint venture to fall apart.

The control and stability issues would be compounded by the need to avoid sharing competitively sensitive information between EchoStar and DIRECTV. The complicated firewall/independent decision-making system necessary to keep separate data on costs, subscribers, and programmer relationships, as well as other key information, would further impede any possibility that the joint operation could be effectively managed. The companies would likely have to coordinate pricing, promotion and manufacturing, in ways that may be significantly limited by the antitrust laws.

On the other side of the equation, the investment required in pursuit of such a volatile spectrum sharing arrangement would be very high, and would require extensive, costly and time-consuming consumer equipment changes that would be impossible to make absent the certainty of the merger. As discussed above, EchoStar's and DIRECTV's set-top boxes are largely incompatible, and customers of each company generally point their satellite dishes to different orbital locations. Thus, the companies would have to select a surviving technology or decide to make a huge investment in dual speak receivers, and bear the significant consumer switch-out costs associated with the merger. In any event, the company whose subscriber base would require equipment switchouts would be at a significant disadvantage caused by customer dissatisfaction. Moreover, either or both firms may need to offer consumers new satellite dishes, in order to receive signals from the shared orbital location. Given the risks that the arrangement could fall apart, the investment necessary to undertake the transition is too much of a gamble without the stability provided by the merger. The resources needed to move to a new, third standard would be much greater still, making that course impracticable as well absent the assurance provided by merger.

Similarly, the decision on how to use each firm's satellite assets could significantly and adversely affect one firm or another in the event the agreement was terminated. Issues such as potential satellite failures and back-up plans would also be extremely difficult to address with separately owned diverse fleets of satellites. Finally, the general instability of such an arrangement would discourage investment in research and development needed to move the

platform forward. Only the merger can provide the stability and decision-making process to overcome these obstacles.

Additionally, if spectrum sharing included national channels, the firms would lose a valuable promotional opportunity. As part of their arrangements with some programmers, EchoStar and DIRECTV receive blocks of programming time, *e.g.*, one minute per hour on CNN, for use in promoting their services. These are a valuable means to communicate with consumers about their business, including promotions and brand-building. It would be difficult to split this advertising time and, more importantly, neither firm would wish to allow the other to advertise to its customers. If spectrum sharing included only local-into-local programming, this problem would not arise, but the spectrum efficiencies would be severely limited, providing further reason that the investment necessary to reach them would be out of proportion with expected returns, particularly in light of the inherent riskiness of joint operation. Thus, the only viable option for attaining these efficiencies is to merge.

D. Provide all analyses, assessments, or considerations regarding the costs of converting the two incompatible DBS systems to a single compatible system. Address costs as they relate to the cost of replacing existing set top receivers with a new receiver; replacing existing satellite receive dishes; re-pointing those dishes; and adding additional dishes at existing home locations. Address any other costs both to the consumer and to EchoStar of converting to a single compatible system.

Please see response to Request X.C above.

E. Estimate the number of set top receivers and/or satellite dishes that would be replaced if the two companies were to merge, the total dollar cost (in $millions) of the replacement of the set top receivers and/or satellite dishes.

F. Provide information on the time period that will be required to replace and/or supplement set-top boxes and satellite dishes

Number of Boxes

The number of set top boxes that need to be replaced with "dual-speak" boxes will primarily depend on whether EchoStar's or DIRECTV's current technology platform is chosen to survive the merger for the receipt of core programming. At least a substantial portion of the legacy platform set-top boxes will need to be replaced. DIRECTV's subscriber base, approximately 11 million consumer households[4], is larger than EchoStar's, about 7 million. As described in response to Request X.C, the Applicants plan to replace at least a portion of the boxes with dual-speak receivers able to receive the signal formats of both EchoStar and DIRECTV. Under that plan, New EchoStar will need to use simulcryption to permit the

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[4] This number includes approximately 1.9 million households served by NRTC Members and Affiliates.

application of the appropriate conditional access systems of both firms. The companies believe that some of the set-top boxes that need to be switched can be changed without a visit by a technician. Many customers feel comfortable with, and, if given the choice, would prefer, to install their own set-top box.

The number of satellite dishes (or components of them) that must be changed will depend on several factors. One is the surviving platform, as all of the satellite dishes are not compatible with all of the set-top boxes. The incompatibility arises because of different methods for the box and dish to communicate about whether the dish should receive, at a particular moment, Left Hand Circular Polarization ("LHCP") or Right Hand Circular Polarization ("RHCP"). The companies are investigating what portion of the existing satellite dishes will work with both platforms, and whether the surviving platform can be made backwards-compatible with a greater portion of the satellite dishes.

In addition, some compatible satellite dishes will need replacement or supplementation because they are not capable of receiving signals from the necessary orbital locations. Currently, approximately **[Redacted]** EchoStar subscriber households have equipment that only allows them to receive programming from the 119° W.L. orbital location, and approximately **[Redacted]** subscriber households have equipment that allows them to receive programming from both the 119° and 110° W.L. orbital locations. The majority of DIRECTV customers' satellite dishes are capable of receiving a signal only from the 101° W.L. orbital location.

Finally, the portion of these dishes that need replacement or supplementation will depend on the ultimate arrangement of programming among the orbital locations. All subscribers will need the ability to receive programming from the orbital location carrying New EchoStar's "core" national programming, as well as the orbital location(s) carrying the specialized and localized programming to which the consumer subscribes. If the 110° W.L. orbital location is chosen as the location for core programming, then virtually all of DIRECTV's customers will need new satellite dishes. The same will be the case for the approximately **[Redacted]** EchoStar customers who do not have the ability to receive programming from 110° W.L., and other EchoStar customers who will need to receive specialized programming from 101° W.L., such as for certain local-into-local programming. If the 101° W.L. orbital location is chosen as the location for core programming, then all of EchoStar's customers will, at a minimum, need to re-point their satellite dishes and perhaps will need new satellite dishes, as will many of those DIRECTV customers who will need to receive specialized programming from the 110° W.L. and 119° W.L. orbital locations. As part of the merger transition planning process, EchoStar and DIRECTV are deciding whether the core programming will be provided from 101° W.L. or 110° W.L.

Another significant factor affecting the time required to complete the transition process is the number of "truck rolls" (or technician visits to customer locations) that can be accomplished on an ongoing monthly basis. While some of the technician capability of the two companies will still be needed for its present purposes, New EchoStar plans to make the

transition process more efficient by using trouble visits and customer relocations as opportunities to install new equipment while the technician is already on site.

As described in response to Request X.C, the companies plan to start selling dual speak receivers as soon as possible. Thus, new customers added to either company will be able to receive programming using both platforms. As preexisting customers churn, the number of subscribers that need replacement equipment or a modification of their satellite dish will decline.

Total Time

While significant spectrum reclamation and other synergies will be achieved shortly following the merger, based on the criteria laid out above, EchoStar and DIRECTV currently estimate that the merger swap-out process will be complete in three to four years from closing of the merger, under all of the scenarios of platform options and satellite programming arrangements under consideration. A significant portion of the spectrum efficiencies gained from eliminating duplicative programming and services will be realized relatively early in the transition process. Under either scenario (DVB or DIRECTV format as the remaining platform), within the first year after EchoStar and DIRECTV merge, all Spanish-language subscribers and existing local-into-local subscribers – about 3 million total – would complete the transition process, freeing a significant proportion of the total spectrum reclaimed by the merger. As each group of subscribers from one service is migrated to the common platform, there no longer will be a need to simulcast that programming, thereby allowing New EchoStar to reclaim spectrum that previously was used redundantly and turn it to more productive use, such as serving a new market with local broadcast service or carrying a new national service.

Cost Implications

In general, assuming a three- to four-year transition period, the total cost of replacing subscribers' equipment and moving to a unified platform for the combined company's subscriber base under current planning scenarios probably will be about **[Redacted]**, depending on whether New EchoStar adopts the DIRECTV format or DVB platform, respectively. The Applicants estimate that each subscriber requiring new equipment to receive the full panoply of services offered by New EchoStar ultimately will have to obtain either a new set-top box, a new dish, or both. In many, but not all instances, the subscriber also will require an installation call. Since New EchoStar will ensure that no subscriber wishing to maintain the same level of service will have to incur any out-of-pocket expense as a result of the merger, New EchoStar will assume all customer-related transition expenses. The Applicants currently estimate that such expenses in the first year after the merger will amount to about **[Redacted]** per subscriber requiring new equipment, decreasing to about **[Redacted]** three years after the merger. In each year following the merger, New EchoStar will execute an additional phase of the transition process described in X.C, above, requiring the replacement of customer equipment for given categories of subscribers. Applying the estimated cost per subscriber of switching equipment and providing installation as necessary under the transition options described in X.C, the following tables provide current estimates of New EchoStar's transition costs over the three years following the merger:

[(Redacted)]

[Redacted]

[(Redacted)]

[Redacted]

G. Provide all analyses, assessments or considerations of the costs and benefits and the technical and economic issues associated with providing local-into-local television broadcast retransmission services: (a) through use of the Ka band; (b) through use of terrestrial technologies, such as MVDDS; and (c) via contract with a separate vendor using these or other technologies.

Applicants are responding to this document request separately from this response.

XI. Fixed Satellite Service Market

A. Provide separately for PanAmSat, for DIRECTV, and for EchoStar, the total amount of current FSS capacity and information on plans to expand FSS capacity in the next two years. Also, provide your best estimate of the total industry FSS capacity, both currently and in each of the next two years.

[Redacted]

PanAmSat estimates that total industry operational C band and Ku Band FSS capacity at present is on the order of **[Redacted]** transponders. PanAmSat projects that industry operational C band and Ku Band FSS capacity will increase by **[Redacted]** over the next year, and by **[Redacted]** over the next two years. PanAmSat lacks first hand knowledge as to the capacity of its competitors, and the industry figures shown in this paragraph have been compiled from multiple sources that may not use the same methodology. Unlike the figures shown in the preceding paragraph for PanAmSat's capacity, moreover, the industry figures shown in this paragraph are based on total transponders, not 36 MHz equivalent transponders.

PanAmSat holds authorizations to launch and operate first round and second round Ka band satellites. The Commission has assigned the following orbital locations to PanAmSat for this purpose: 36° E.L., 40° E.L., 48° E.L., 124.5° E.L., 149° E.L., 173° E.L., 103° W.L., 133° W.L., 58° W.L., 45° W.L., 68.5° E.L., 72.7° E.L., and 166° E.L.